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Original Contributions.

PORCELAIN INLAY WORK.

BY W. H. UPJOHN, D.D.S., LAFAYETTE, IND. READ BEFORE THE NORTHERN INDIANA DENTAL SOCIETY, AT LOGANSPORT, SEPTEMBER 19-20, 1905.

The art of porcelain inlay work has done much for the dental profession in beautifying the dental organs when decay has badly marred them. Gold fillings look better than decay and porcelain inlays than gold. But gold fillings are indicated in most cases for the average practitioner, as time and money alter cases. We cannot spare the time on inlay work for the price of gold fillings with every patient, and every patient will not pay the price. We can get fair to good prices from many of our patients. Many of them will pay full price for what they want, where pride overrules a full pocketbook. A great many patients demand what they want contrary to our good advice as to what is indicated. We cannot say, "Take what we give you or nothing," for that would be rather indiscreet on our part and drive patients away. We must do work many times that pleases patients but displeases us. While we love to do all inlay and porcelain work from an artistic standpoint, we must not forget that we should be gold and amalgam artists from a practical standpoint. All dentists cannot control their practice as they would wish, as they must cater to the wants of their patients, considering conditions financially, mentally and socially. The combination of the three conditions produces different results in different localities.

The dentist who locates in a new place must first study the people who are to become his future patients. Their wants must be complied with, and his educating them to his wishes must be done gradually or he will lose in the end. We must show the successful results of our efforts in anything new to our patients before we can launch out with any new process and before our

success can be announced. We, individually, are willing to give more for something that has given good service and self-satisfaction in proportion, than good service and dissatisfaction. When patients can realize that we can produce a porcelain filling that will proportionately last as long as a gold filling, as to price, they will give more for the porcelain. But we must educate them to the value of the porcelain art for what it is really worth financially and æsthetically.

We must first consider the mechanical results when an inlay is indicated. Secondly, the æsthetic. Failures of inlay work are due to not giving proper attention to certain mechanical results. A cavity must be prepared with a view to anchorage, independent of the adhesive properties of cement, and the formation of the cavity must allow for sufficient body of the inlay to give strength in mastication. Three points of interest must be considered in mapping out our inlay work. Fracture of the inlay, the tooth and adhesion of the cement.

The anchorage points of the inlay and tooth should be of equal strength on all incisal and masticating surfaces. The "L" shape of an inlay for an incisor or bicuspid should be given the reverse curve at the angle, making it an obtuse angle, avoiding, as far as possible, right and acute angles in all inlay formation. The curve is a line of beauty strength, and one of art's most needed elements.

Every part of the human anatomy is composed of curves, so in our preparation of cavities we must not lose sight of the art in nature to produce good and æsthetic results at any point of vision. Keep the right and acute angles out of sight. Our patients will be much better pleased, and pleasing our patients is our stock in trade.

The reverse curve used in porcelain inlay work for anchorage will save more inlays from fracture than any other formation of cavities on masticating surfaces.

Much attention should be given the tooth structure in formation of cavities. To weaken the tooth in proportion to the inlay, you weaken the foundation for the same, and the liability of encroaching upon the nerve should be avoided as much as possible. When the incisal corners are as strong as an L-shaped inlay would be, an approximal inlay is indicated, making the labial part of the cavity a half-circle, with obtuse angle walls lingually, forming a round groove on the lingual portion of the floor of the cavity with a

reverse curve emerging into a second slight groove in labial portion of the floor of the cavity to form a seat for the inlay, as indicated in cavity No. 1.

Where the removal of the incisal corners is indicated the step cavity is usually adopted something after the order of cavity No. 2, with the reverse curve over the incisal edge and a groove from the incisal toward the gum with reverse curve over the floor of the cavity from the lingual toward the labial portion. A second groove at the gum margin dipping into the dentin, from the labial portion under the enamel and through the enamel on the lingual, giving a form of cavity to make a good seat for the inlay with easy withdrawal and good anchorage.

A modification of cavity No. 2 is found in No. 3, which can be used in cases where there is plenty of space obtained laterally to insert the inlay.

The V-shaped concavity is often found in decayed anterior teeth with a solid wall of enamel surrounding this V-shaped seat for anchorage which should be slightly obtuse with a small groove at the gum margin. Before cementing the V of both the inlay and cavity should be slightly grooved, so that the cement will form a lock to keep the inlay in place at the incisal edge.

Cavities Nos. 1, 2 and 3 can be modified to suit the individual cases which are shown in models displayed. Nos. 1, 2 and 3 are cavities with the primary principles of anchorage represented for incisors and cuspids. Cavities of this sort are such as we see mostly, indicating porcelain inlays from an æsthetic point of view. Also cavity No. 4, indicating the much-needed inlay for convenience and saving of much discomfort to the patient. Those cavities are usually found to be oval or kidney shaped, following the outline of the gum at the neck of the tooth. The cavity is prepared with a flat bottom, slightly rounding up to an obtuse angle to the margin. In this form of cavity, sometimes, there should be a small pit made in the bottom of the cavity close to one end with a No. 2 round bur, half the depth of the bur, so that there will be no mistakes in setting the inlay properly. Generally the cavity can be formed so that the inlay will only pass to its seat in one way.

Cavity No. 5 is indicated where a large corner is broken off or decayed, including part of the approximal and incisal edge of an

incisor or cuspid. This may be called partial restoration of the incisal edge. This is prepared with a groove at the gum margin not passing through the labial or lingual plate of enamel, first forming an outline about as represented on model, then a step on the incisal edge, with a slight reverse curve, forming a small round groove cutting through the enamel on the lingual surface to the enamel on the labial, forming an anchorage laterally and protection against the occlusion of the lower teeth. A slight dip can be given the anchorage at the gum margin into the dentin, giving this little round groove the advantage of holding the inlay from slipping down when once cemented in and the approximal tooth has returned to its former place occupied before separating; and not burring the groove through the enamel, gives the inlay no chance for posterior or anterior movement. If desired by the operator, a platinum pin can be added at the gum margin or a pit can be drilled in each groove.

Model No. 6 represents the restoration of the incisal edge and its modifications to suit different cases for the protection of the nerve:

(a) Where the tooth is thick, a circular groove can be cut with a No. 1 round bur as deep as the bur's diameter, but drilling two holes in the groove, one at the distal, the other at the mesial part of the tooth, 1-16 of an inch in depth, and a trifle larger than the platinum pins to be used. This form furnishes a good seat for the porcelain restoration and lessens the danger of encroaching upon the nerve.

(b) Where the incisal edge is of the thin variety and not too near the nerve, a good form is to cut a groove between the holes made for the platinum pins, giving plenty of additional strength to the restored incisor.

(c) Is another form where the nerve is too near the surface to risk a groove, and too thin to make a circular groove. A step is made on each side of the tooth, grinding the incisal portion slightly more in on the labial and lingual margins, giving a form so that the restoration inlay can be slipped on and off like a ferrule, making it less possible to dislodge by the anterior or posterior movements in mastication. This form does not need any platinum pins for additional anchorage.

Model No. 7 is indicated where thin incisal edges are found

decayed. This preparation will allow for a strong inlay and easy insertion. The labial formation of the cavity can be half-moon shaped or any outline to suit the operator. This outline is duplicated but a fraction deeper on the lingual half of the cavity through the enamel, except in the center there is left a small protuberance of enamel to assist in guiding the inlay into place and holding it there when cemented. The making of additional grooves for the anchorage on the lateral walls of the cavity depends upon whether the occluding tooth makes it necessary or not. Where the incisal edge is thick enough, a groove corresponding with the half-moon shape of the cavity between the lingual and labial plates of enamel can be cut with a round bur, being careful not to undercut, so that the matrix can be easily withdrawn.

Saucer-shaped cavities on any surface of the teeth are supposed to be a thing of the past. Any system of anchorage adopted in the saucer-shaped inlay does not insure its permanency. Also it is not easily seated. All cavities for inlays should have two or more definite seating points, so that when we cement any inlay in we can be positive that it is in place without any guesswork or loss of time after the cement is mixed for inserting the inlay. Cavities of the cuspids can be prepared on the same principle as incisors, only that the cusp must not be divided, but stopping short of the cusp in the preparation of the cavity or include it in the inlay. The same principle will hold good when preparing a cavity in a bicuspid or molar for porcelain inlay. The margins should be as nearly as possible cut at a point where acute angles can be avoided, leaving a right or obtuse angle where the occluding tooth touches to avoid chipping of the enamel or inlay.

The principles for anchorage of porcelain inlays in bicuspids and molars are about the same as in cuspids and incisors, only on a larger scale. A slight groove or dentation at the gum margin and a step with reverse curve producing a groove at the occlusal part of the tooth.

Any other additional points for anchorage depend upon the fancy of the dentist or the case.

Many little original ideas should be carried out by the dentist in cavity preparation to give his inlays strength, a good seating and anchorage as well as to appear artistic. Cavities and teeth are not always the same and new conditions are daily confronting

us. When a porcelain inlay is indicated we have to formulate in our mind what course to pursue for the best results, as to cavity preparation, mechanically.

The chemical results follow on the treatment on the surface and the inlay previous to cementing the same. Clean the cavity with peroxid to remove saliva and blood, and dry with alcohol and air syringe; then rub in the cement liquid, but leave no surface, as it would tend to disorganize the harmonious condition of the cement and weaken the same. In the meantime, the inlay has received its treatment by undercutting with a diamond disc, etching with hydrofluoric acid or bisquing the inlay, previous to its first baking, by coating the matrix with a mixture of cement powder one-half or two-thirds to one-half or one-third of foundation body or Brewster's matrix lining, following in the second baking with the matrix lining or foundation body. Bisquing the inner surface of the inlay is much better, I think, than etching and very much safer for both the operator and inlay, also more quickly done. The bisquing process affords a mechanical as well as a supposed chemical means of cement adhesion to the inlay. Whatever condition the inlay is left in for cementing, it should be treated with the cement liquid the same as the cavity. The bisque lining of the inlay answers two purposes; it keeps the foundation body from drawing the matrix out of shape, and affords stronger adhesion when cemented in. A thin coating of the bisque mixture over the matrix is all that is necessary, consequently it will in no way weaken the inlay. When the Brewster matrix lining is used the cement powder for the bisque should be mixed with it, otherwise with the lower fusing foundation body.

Brewster's matrix lining will assist in retaining the original shades of the inlay after cemented in the tooth. It will not, however, do everything for us, as we must get the proper shades combined to match the natural tooth. In shading an inlay to match a tooth, two or more blending shades should show on the surface of the same. The darker shades placed next to the darker shades of the tooth and the lighter distributed in the same way. Brewster's oil colors are used when extreme yellow, brown or white spots are to be continued after the inlay has received its necessary polishing of the feather edges before removing the matrix from its inner surface. Polishing over oil colors would

usually spoil the effects of the intended shading, and the oil colors must be fused on the inlay before removing the matrix, as baking an inlay after the matrix is removed is very liable to destroy the margins and the fit of the whole piece.

The rule to go by when baking a porcelain inlay, when the pure gold cylinder test is used, is as follows:

Bisque mixture, 20 seconds.

Brewster's Matrix Lining, 40 seconds.

Brewster's foundation body, 30 seconds.

Brewster's enamel body, just as soon as the gold fuses into a perfect ball.

Brewster's oil colors, the same as the enamel body.

The matrix lining and foundation body should be baked 30 and 20 seconds when two bakings are made of either, as baking 40 and 30 seconds twice is liable to overbake the inlay.

In baking the enamel body, until the last baking, the fusing point should be stopped just before the gold forms into a ball. The oil colors should be fused the same way as the enamel when more than one coat is used.

The best and quickest way to get a high polish on an inlay when the oil colors are not used is to take off the rough with a carborundum disk and follow with a true-running light-colored wooden wheel and clean pumice and water. To save the time and trouble of looking for a lost inlay, before polishing place it on the end of a small stick with sticky wax, and it can then be held and polished very quickly and easily. Remove the inlay from the stick after slightly warming it, and place into the furnace and burn off the wax, leaving the inlay free from the same and making it easy to brush off the remaining pumice. The inlay is then ready for the cementing.

Having studied the proper adjustment of the seating of the inlay, it is soon cemented in and held to place firmly by the operator until the cement is stiff enough to hold without displacement, while wedging or tying for a few hours. In the meantime, leave the surplus cement alone until the wedge or thread is removed, as it is not necessary to remove the surplus to see whether the inlay is in place if properly seated by the cavity preparation. Polish the cement from the margins by using an Arkansas stone or fine file or trimmer, to avoid marring the glaze or polish of the

inlay. A very fine grit white strip or disk can be used when a final polish of the margins is necessary.

DISCUSSION.—*Dr. J. Q. Byram,* Indianapolis: I wish to reiterate a few statements which I have made in the past few years in regard to the subject of inlay work, and one of the first is the necessity of proper preparation for this work. A number of dentists buy an electric furnace and a porcelain outfit and take these to their offices, make one or two experiments, attempt then one of the most difficult inlays that it is possible for us to make, and then make a failure. Probably they try it again and make another failure. The next thing they do is to place the furnace in the laboratory and the box of porcelain in an obscure drawer and begin to denounce this particular branch of our work. They say that it is a fact that there is nothing in it. With due deference to such practitioners, I want to say that there is something in inlay work. Let me say that it is different from any line of work that we have in the dental profession; cavities are prepared and fillings are retained by principles which are diametrically opposite to those which you have been using. Ordinarily your inlays fail because of these points of difference, and unless you make a thorough study of this subject you will fail. Those of us who are, however, fortunate enough to be enthusiastic over this work are spending odd hours, not only in the daytime, but in the evening, in our laboratories making experiments, in order that we may perfect ourselves in this work. Now, those of you who are going to take up inlay work, go at it with enthusiasm and perfect yourselves. Don't begin on practical cases, but if you must do so don't select the most difficult in lays and expect to make them at the beginning.

You must observe mechanical principles in the preparation of cavities for inlay work. If you shape the cavity in the ordinary saucer form, which has no retentive resistance, and imagine it is going to retain the inlay, rid yourself of that idea as soon as you can, for the formation of that form of a cavity for the inlay does not retain it.

The next point to which I wish to call your attention is the necessity of cutting enough tooth structure. It is an established fact that porcelain will not support frail enamel. There was an impression a few years ago that when an inlay was cemented into

position the cement not only retained the inlay, but supported the frail enamel; that all one had to do was to cement the porcelain into position and it would support the frail walls. I cut as much for porcelain as I do for gold. What I want is a solid tooth substance in order that I may properly prepare the cavity to retain the inlay.

A word about the color problem. Many of you know either red, pink, black, brown and gray when you see them. But when it comes to differentiating the different shades of these colors and the hues of the shades you can have but little idea of what it means. That is shown every day plainly in the way orders for teeth are sent to the supply houses. Before you attempt doing much inlay work get some good work on colors and study it. Get it from the public library, if you have access to one. Another thing, let me say, that will help you is to buy a fifteen-cent water-color outfit and spend some of your odd hours in making combinations with the colors. You would be surprised at the large number of combinations that you can make from them, practically any combination being possible. Get this so thoroughly impressed upon your gray matter that when you look at a tooth you can see whether the predominating color is yellow, blue, gray or brown, or whether it is gray with a yellowish hue, or gray with a bluish hue, etc. Study the different sections of the tooth before making any selection.

In selecting colors for a porcelain inlay you will find it is best to study it by sections—that is to say, instead of looking at it in its entirety, study the incisal portion of the tooth, then the gingival portion and finally study the tooth in its entirety. If you look at a tooth in its entirety it gives you simply the general color effect, and you do not get the separate delicate hues.

You will find that under normal conditions—and when I say "normal conditions" I mean teeth with vital pulps—the dentin of 95 per cent of teeth is yellow. I have contended for years that the color of a tooth is largely due to the pigment of the enamel. I have a pet theory about that, but am not enough of a physiologist to prove it. I believe that the enamel contains pigment and that the color of the teeth is a temperamental condition, the same as the color of the hair and eyes.

There are certain things to take into consideration here. You

know that the absorption and reflection and the refraction of light affects color. The intensity of the color is governed by the thickness of the mass. The thickness and density of a tooth are factors in producing its color. You can see that it is very necessary to consider this fact in the selection of colors for inlays. If you are using a thick mass of porcelain you should not select as dense a shade as you would for a thinner layer.

Another point about colors is the probability of changing some colors. When you mix yellow and blue you can expect to get blue with a yellowish hue, or yellow with a bluish hue—in other words, you get green. The colors that are most common in all teeth are blue and yellow; about 85 per cent of all teeth show a decided blue in the incisal region, while the middle and gingival are of a yellowish hue, and, in the application of the porcelain, you must carefully apply it in such a manner that these two colors do not get mixed. If the pigments are mixed you will have a chemical reaction, so that you get either blue with a greenish hue or yellow with a greenish hue.

I believe the fusing of porcelain is largely chemical reaction. I have made enough experiments to cause me to believe this, and I want to mention it here, as it may be of value to you in the fusing of porcelain. First, let me say that high-fusing porcelain will fuse on pure gold if you heat it long enough. To say that this or that porcelain fuses at 2,200 degrees, 2,300 degrees, 2,400 degrees and 2,500 degrees is a mistake. If you run the heat to that point for a short time it fuses, or if you take a longer time and a lower temperature it also fuses, and you get the same chemical reaction. I believe that we are making a serious mistake at the present time in fusing our porcelain rapidly. Experiments show that our inlays are not so dense as they are when fused slowly and for a longer time. Take all the porcelain on the market used for inlay work and you will find it contains a flux. Potassium or sodium carbonate are used as fluxes. The other ingredients of porcelain are silica, the oxide of silicon, feldspar, which is a double silica, aluminum and potassium and kaolin, which is a silicate of aluminum, and when these are heated with the carbonate of potassium or sodium the mass undergoes a chemical change, and I believe that there is a generation of carbon dioxide. If thoroughly dried, porcelain is heated rapidly to the point of vitrefaction, the carbon

dioxide is generated faster than it can escape; consequently, minute bubbles are formed on the porcelain. This can be avoided by fusing at a lower temperature for a longer time and allowing the chemical change to take place through the entire mass in such a way that the glaze is not formed on the surface before the gas has escaped.

INDICATIONS FOR SCIENTIFIC PROGRESS IN STOMATOLOGY.

BY V. A. LATHAM, M.D., D.D.S., F.R.M.S., F.L.S., CHICAGO. CHAIRMAN'S ADDRESS, READ BEFORE THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, 1905, AND PUBLISHED BY COURTESY OF THE JOURNAL OF THE ASSOCIATION.

In looking over the long list of papers to which we are to listen we are again struck with the enormous importance of the modern principles of dental surgery. You will pardon me when I emphasize the importance of the special study of diseases of the oral cavity and its surroundings, for I am jealous of the reputation of this Section. It is a matter of pride to show that we have not only held our work in respect but have been followed by a conservative country, i. e., England, which at the last meeting of the British Medical Association (1904) founded the Section on Dental Surgery, putting it in its right place in relation to the sciences of medicine and surgery. As a step forward this should do much to raise the standing of the dental profession and, more important still, to impress the general public. Dental surgeons now will, it is hoped, take a larger interest in general medicine, pathology and surgery, both in their practical and in their scientific requirements; and the medical men themselves will be found to take more interest in some of the special points relating to our science and its pathology.

Oral pathology, indeed, bears a startling and unexpectedly close relationship to general medicine and surgery and may elucidate many obscure cases. I refer to the work of oral sepsis as first studied by Dr. William Hunter (British Medical Journal, July, 1900. Monograph on "Oral Sepsis") of London in 1900 and his special division into oral sepsis, i. e., the various effects of strepto-

coccal and staphylococcal infection found in the mouth and oral infection or infection through the mouth in diphtheria, tuberculosis, influenza and pneumonia (Hunter, British Medical Journal, November 19, 1904. Turner, "Oral Sepsis," Practitioner, February, 1905). To the valuable work of this author, we can add the results of Mr. Goodlee, Mr. Owen, Dr. Sidney Martin, Professor Grawitz and Sir Thomas Barlow, men whose observations are entitled to the highest appreciation and from whose papers valuable data can be secured. How much does the improvement in surgery owe to the dental surgeon? Certainly in the results of excision of the tongue, removal of the maxillæ, operations on the nasopharynx, cleft palate and cosmetic operations, more radical cures have been effected, not only because ordinary hemorrhage and septicemia are far less common, but the danger of septic pneumonia, parotitis and erysipelas is much diminished.

The first step in advance was Campbell de Morgan's application of zinc chlorid to the raw surface at the end of an operation. Then carbolic acid had its day, followed by iodoform, then Whitehead's varnish and other applications of a similar nature. The greatest advance, however, lies in sending the cases to a dental surgeon, for the important steps needed are: 1. Scaling teeth. 2. Opening and cleansing pyorrheal pockets. 3. Extracting and filling carious teeth. 4. Waiting for the operation till after a thorough cleansing toilet orally and systemically. 5. The insisting on antiseptic mouth washes, which, according to their length of use and ingredients, become deodorants, disinfectants, detergents, antiseptics and germicides.

It may be asked how this work can be accomplished by one or even by two dental surgeons who are attached to a large hospital, and who unfortunately may forget that holding several such appointments cannot always be conducive to the welfare of the patients. True, many of these appointments carry only the honor and nothing else with them and much valuable material is never utilized in any way and I would suggest that the method of handling such hospital work be considered. Is it by increasing the dental staff or in the simpler methods of preventive medicine? In the limited time at my disposal I can only point out the national importance of avoiding septic conditions of the mouth, as they are a frequent cause of cervical tubercular adenitis—a fact seldom considered by

either department of the medical or the dental professions. If a child has a tendency to enlarged glands, shall the teeth be extracted, especially when we have gingival abscesses, stomatitis and live teeth present, as is so often the case in primary dentition?

Tuberculosis is another disease which shows the need of careful investigation. Tuberculosis of the tonsil is rarely a primary condition in children, but is considered by Kingsford (Lancet, London, 1904) as a common condition, for, in spite of the opportunities afforded the dentist of noting the oral conditions of children, especially in regard to adenoids and their sequel, mouth breathing, as a common antecedent to phthisis, the connection between these conditions seems to be inadequately recognized, but it is obviously of practical importance, if only as regards prophylaxis. That one-fifth of an unselected series of consumptives are found to be mouth breathers and that such a trifle as projecting teeth may conspire with unfavorable conditions to make a patient phthisical seem facts worthy of our attention.

Another statement we often hear, especially from the older medical men and from the laity in regard to a suppurative tooth is: "Wait till the swelling goes down before you have anything done to it." Are there any grounds for this idea, any danger in opening the abscess or in extracting the tooth if badly diseased, thereby saving the patient pain, danger and delay? We are warned against extraction of the sequestrum in cases of necrosis before complete separation for violent septicemia and death have been reported in patients with unhealthy mouths. Godlee (Brit. Med. Jour., Nov. 19, 1904) mentions septic thrombosis of the facial vein which has spread upward and caused fatal thrombosis of the cavernous sinus; and embolic pyemia has been known to occur in the same way.

Necrosis of the mandible and of the maxillæ has been seen in children as a sequence of alveolar abscess and even of infection of the antra and of other air sinuses, especially following attacks of influenza. A question for your consideration is the origin of the parotitis following laparotomies. The theory now advanced seems to depend on the patient's having been starved so long that the functions of the salivary glands are in abeyance, septic organisms follow the largest salivary duct which would not occur if it were acting in a normal physiologic manner. However this theory may be, it seems a welcome explanation of this painful and dan-

gerous sequel, sometimes occurring even when every aseptic precaution was taken. The theory of starvation is not acceptable in all cases, for we know that when wearing artificial dentures, patients may have this condition, even in the submaxillary and sublingual glands, which I suppose is due to pressure on the ducts. Again, conditions in which the saliva is ropy and viscid produce the same state and on dilatation the saliva may be taken out in thick ropy masses, thus relieving the swelling, pain and discomfort.

Another subject for some thought is the question of treating the open wound following extraction of teeth. How many of the operating rooms of the big concerns called "extracting parlors" ever pay much attention to aseptic and antiseptic treatment? Would the wounds benefit by local applications, as recommended by Prof. R. J. Godlee, of zinc chlorid (40 gr. to 1 oz. of water) and iodoform to the raw surfaces?

To Harvey Cushing ("Experimental and Surgical Notes on the Bacteriology of the Upper Portion of the Alimentary Canal, with Observations on the Establishment there of an Amicrobic State as a Preliminary to Operative Procedures on the Stomach and Small Intestine," Vol. ix. Johns Hopkins Hospital Reports) of Baltimore we are indebted for first showing surgeons the importance in operations on the stomach and intestines of a preliminary sterilizing of the mouth and of all foods administered by the mouth. (Hewetson: "Bacteriology of the Human Alimentary Canal and of the Inflammatory Processes Arising Therefrom." British Medical Jour., Nov. 26, 1904.) With the rapid advance of science it is impossible to keep pace with all that is being done, and it requires nearly all one man's attention along one line of research to enable any study to be well done. It must not be exclusive, however, for as a rule, pure specialism tends to narrowness. "There must," said Dr. Billings, "be specialties and specialists, and the results will be good or evil, but the evils fall largely on those specialists who have an insufficient general education, who attempt to construct the pyramid of their knowledge with the small end as a foundation." If the field of any specialty be narrow it can be dug deeply. In science, as in mining, "a very narrow shaft, if only it be carried deep enough, may reach the richest stores of wealth and find use for all the appliances of scientific art." So in special branches into which all practitioners of medicine are

being divided, it is necessary to recognize the influence and the presence of the general practitioner whose wide knowledge of his patient's condition must prove of invaluable assistance to any special worker, and nowhere do we need it more than in dental surgery, for even blepharospasm has been known to have a dental etiology. The mechanic can never be the true dentist without a knowledge of general science and pathology, which gives the etiology of disease and general medicine and surgery; but the true scientific dentist can by experience become more than a mechanic and with far better success, for he knows the pitfalls and the dangers to his foundation from his principles of mechanics.

In diagnosis we need further teaching and study. Take for example the use of transillumination of the antrum of Highmore. (British Medical Journal, March 25, 1905.) Expertness in this method (Druchleutung) was attained by Czermak in 1858 in studying the larynx and by Voltolini in 1888, who first transillumined the antrum while studying the bones of the face, Heryng placing it on a practical base. Vohsen in 1890, by using a stronger light, showed that the eye also might be transillumined, the pupil appearing as a red disc. In 1892 H. Brown Kelly of Glasgow showed that by this method a person with closed eyes sees a dull red glow if the antra be normal, but if the antral *tache* be absent, the subjective light sensation will also be absent, and its value as an agent in chronic affections of the nose and antra, etc., needs more study. The field of investigation for the X-ray and stereoscopic radiography is new to us, but is yielding much valuable information as well as warnings of its dangers to both subject and operator, and showing that only skilled workers should be allowed to operate such far-reaching agents as the X-rays.

At the present time dental bacteriology is in its infancy. If, as Arkövy and Goadby (British Medical Journal, Nov. 19, 1904) point out, we have a new form of microbe of a very pathogenetic variety in connection with pyorrheic pus, an explanation of pyorrhea or caries alveolaris specifica or interstitial gingivitis or osteomyelitis may be found, and we hope a terrible scourge in oral pathology stopped. With the present unsettled work in connection with the group of pus germs and their varieties much has to be done to prove their identity and their relationship before we can profit by the serum treatment or the effect of toxins on the peripheral

nerve endings of the gingivæ. Mikulicz has recently developed a most interesting problem. By injection of nucleic acid or even of normal saline solution, an artificial hyperleucocytosis may be produced which may combat bacterial invasion even when this has already made itself manifest, such as in diseases of the stomach and intestines which demand surgical interference.

So far as I know, little or no work has been done on the influence of the growth of bone on the positions of teeth. Who has not noted pathologic effects from bone changes without any seeming cause, or with an early gingival and pyorrheal condition which may lead to atrophy, osteomalacia, crowding and even turning of the teeth from the normal?

The question of having or not having some softened dentin over a pulp nearly exposed is often wrongly interpreted; consequently, excavation is too superficial and masses of carious dentin are left, notwithstanding energetic disinfection. Partsch has demonstrated in his valuable work on decay of the dental pulp that bacteria will soon migrate into the pulp and lead to its decay. By far-reaching removal, however, of carious masses we reduce the danger of pulp infection to a very low point, but should we risk it unless we carefully note the type of patient? It is claimed by some that pyorrheal teeth are improved if the pulps are removed and if so how has it been proved scientifically?

Other features of interest, on account of the disfigurement and serious trouble likely to follow, are the changes which take place in the bone and tissues surrounding the teeth, causing their change of position, crowding or erosion, altering all the ordinary articulation of the teeth. So far no work on the pathology, etiology or treatment has been considered and the subject is one that requires some attention as falling within the province of oral surgery and pathology. Our public institutions, such as asylums, jails, county hospitals, and industrial homes have outbreaks of dysentery, stomach and intestinal troubles which are attributed to dyspepsia due to unsuitable food and to confinement with crowding. How many are really due to unhealthy conditions of the gums, mouth, teeth, and are often classed as scurvy? Let these patients be urged to clean the teeth and mouth, using some toothpick, brush, dentifrice or antiseptic wash, and many patients would recover without any change of diet. Let the cleansing of feeding vessels with sterile sand,

plenty of soap and hot water be insisted on and diarrhea, dysentery and alimentary troubles generally would become *nil.*

Why should not a dentist be appointed to inspect mouth, gums and teeth of every inmate in the Monday parades? The dental outfit should be paraded with the rest of the prisoner's or inmate's equipments. A few extra marks given for attention to these details, and for the neglect of them punishment, would benefit both health and discipline. Prisoners and patients, like other human beings, when dyspeptic or with sore teeth, mouth and gums or when otherwise out of sorts, are liable to take a distorted view of things and to become fractious. Picture a patient without proper means of cleaning his teeth for long periods at a time. The accumulations of tartar, a certain amount of septic material or the *Oidium albicans* (the latter especially if the person is debilitated from some exhausting disease as typhoid, pneumonia, influenza, malaria, and if he is receiving milk in his diet) are not long in working their effects. The gums and teeth become congested, tender and lead to the bolting of food, which, being held in the stomach, causes fermentation with dilatation and cardiac gastric and intestinal troubles and the natural sequences, diarrhea, colitis, appendicitis, biliary catarrh and dysentery. If one believes in the "dysentery ulcers" of the mouth (Cheyne and Burghard), although their exact relation to the stomachic condition is not clear, it is easy to infer how the etiology is established and the course of disease continued. I believe that in many jails in Bengal steps are taken to enforce cleanliness of the teeth by toothpicks, use of toothpowder made of charcoal and powdered burnt alum. The East Indian and African in free life is very careful of his teeth and every opportunity should be given him in prison to keep up this cleanly practice.

The question of the teeth of children in elementary schools is one of our greatest difficulties and since we know the dangers of oral sepsis and its possible origin of septic, pyemic conditions, pneumonia, diphtheria, etc., it becomes one of the greatest gravity. The estimation of dental caries can be better made and its progressive increase will be seen. To arrive at the etiology we shall have to go to the infancy period and see that the chief predisposing causes are heredity and malnutrition; the determining cause is the general neglect of the mouth, but especially allowing the food to accumulate about the teeth and so, by the lactic acid and such

microorganisms as yeast or streptococci acting together, the albuminous substance is dissolved and decalcification of dentin takes place. Improper and insufficient feeding of the mother before the birth of the child should be carefully guarded against. The tendency to use only patent foods instead of pure milk is known to affect the two sets of teeth seriously. Some recent observations by Dr. William Hall of Leeds, England, between the children of Jewish and Gentile parents at various ages shows the Jewish child was not only better developed physically but suffered less from bad teeth. In Mrs. Watts Smyth's book, "Physical Deterioration," we find the following:

"Comparing a Gentile school in a good district with a Jewish school in a similar one, Dr. Hall says that the Gentiles had 8 per cent rickets, 38 per cent bad or backward teeth; the Jews 5 per cent rickets and 11 per cent defective teeth. In a Gentile school in a poor district there was 50 per cent rickets and 60 per cent bad or backward teeth; in the Jewish school 7 per cent rickets and 25 per cent bad or backward teeth. The percentage in the Jewish poor district town school was better than the country school, where 7 per cent had rickets and 33 per cent bad or backward teeth. As evidence that this condition of the teeth is associated with better physical development the Jewish child aged 7 years weighed on an average four pounds more than the Gentile, at 9 years seven pounds more. Jewish women are better taken care of during pregnancy, more anxious to nourish their children, more attentive in early childhood and feed them more intelligently."

Once a tooth is formed, nothing will change it for the better, so that the effects of imperfect nutrition will only influence the portion of the teeth then being calcified. Damage done during calcification can never be undone and we are well acquainted with the effect of any serious illness on the hair and nails. Carious teeth give pain of a recurring and most wearing and aggravating character, as well as loss of rest and subsequent impaired usefulness, not only to the sufferer but to all the household as well. This is bad enough for one of mature years, but is more serious for a young child, as it leads to fear, pain, imperfect mastication, dyspepsia, anemia, defective nutrition, intestinal and gastric troubles with toxic effects local and remote, and stunting of the growth—to say nothing of the irregularities in the jaws and teeth—and, added to all this,

the infliction of much suffering on others, for his exhaled breath is even worse than that which reaches his lungs. The remote effects are so great as to be legion: Suppurating glands of the neck, diseases of accessory cavities of the jaws, to say nothing of the cancers of the tongue and jaws. If, instead of teaching unnecessary subjects, a little more time were spent in cleaning teeth with some antiseptic tooth powder on the child's arrival in school and before leaving, something might be accomplished. Where some children are taught cleanliness, many are not, for with mixed schools, all classes of children work together and disease is carried from one to another and unclean mouths should be rejected as we would suppurating eyes, ears, or necks.

A subject which has interested me during some histopathologic work is the cause and frequency of a condition resembling obliterative arteritis in the pulps and periodontium. It has some bearing, I believe, on the question of alveolitis, gingivitis and their sequelæ, for in some cases examined pathologic conditions similar to those found in the lower extremities (i. e. in the dorsalis pedis artery, and in the popliteal and tibial vessels) have been described. The lumen is wholly or nearly obliterated by fairly dense connective tissue and round-celled infiltration, and in others are organized thrombi with well marked and thickened intima and media. Further study of a collective series of cases would perhaps aid in the understanding of so-called pyorrheal conditions, atrophy and recession of the gums with corresponding loss of the teeth. If I might suggest, there should be a collective investigation committee or bureau to which material could be sent and members could then by mutual help, discussion, and literature aid in determining some of the leading questions as to etiology and treatment of many conditions. In a country so large and widely scattered, much valuable material is lost, but, if a bureau of workers were formed, material could be placed in the hands of those competent to study it and could be reported on at the meetings and through the journals, for we sadly need a dental literature index, so we could know something of what others are doing. The loss to workers through the discontinuation of the bibliography by the *Dental Cosmos* can hardly be realized, for few can afford to file all the journals necessary to follow up that work. Tropical diseases are everywhere taking lead with our scientists and it is interesting to see some of the work that is being

discussed which has an important bearing on oral pathology and which is bringing to light facts in relation to the teeth, jaws and tongue. Our program shows very nicely the wide application of medicine to dental surgery, of tropical medicine to pathology; the close relationship of the M.D. to the D.D.S.; the need of a broad scientific education as well as its mechanical principles; the value of the bibliographic study; the need for special research; the appointment of dental surgeons to act in public institutions as well as in the Army and Navy; the utilizing of material for study by a bureau of investigation and the early teaching of hygiene to the mother and child so as to increase the physical and economic improvement of our people.

DISCUSSION.—*Dr. M. L. Rhein,* New York, stated that he is in thorough accord with Dr. Latham's idea of a central bureau for scientific study of pathogenic or other specimens that might be sent from various parts of the country, and hoped that such a plan could be put on foot.

Dr. Eugene S. Talbot, Chicago, said that, though the average dentist does not see anything in relation to his specialty but the mechanical side, within the last few years certain men in the country have demonstrated that there is hardly a pathologic condition of the mouth that is not due to some constitutional cause. He considered that, perhaps, the most important point in Dr. Latham's paper is that in regard to the treatment and care of the mouth during the development of the child. Almost all of the deformities and pathologic conditions of the mouth, he said, can be produced by a want of proper nourishment; the first period of stress is probably the most important period in the development of the child, and deformities of the jaws, irregularities, etc., are apt to occur when the tissues begin to form. He agreed with Dr. Latham that nerve-end degeneration has much to do with the development and disease of the teeth. In the specialty of stomatology, as well as in other specialties in medicine, autointoxication and mouth infection are important causes of disease, and if this specialty is to take rank with other specialties of medicine these three important points must be considered.

Dr. M. I. Schamberg, Philadelphia, declared that workers in this field are better able to realize its scope than the average dentist or the average practitioner of medicine. It is always a great pleas-

ure to be able to do for patients that which so many others fail to accomplish, and it is for the purpose of spreading this information to the general practitioners of medicine and dentistry alike that the Section takes up these topics. It is a pernicious practice to retain abscessed teeth until beyond the acute stage, but the extraction of such teeth invariably is not to be advised. In Philadelphia there has recently been established a corps of medical examiners, but it may be some time before it will be possible to place dental examiners in the public schools. From what Dr. Rhein is able to learn, there are very few children in the schools whose teeth are not badly neglected; and it shows the necessity for a united effort on the part of dentists throughout the country.

Dr. John S. Marshall, San Francisco, believed that with absolute oral cleanliness it would only be two or three generations before dentists would be scarce. Diseases of the mouth are usually diseases of neglect and sometimes of filthiness. Some individuals, even ladies, are perfection in dress, in the way they take care of their skin, their finger nails, etc., and yet when they open their mouths the odor of their breath, the discoloration of mouth and teeth, are disgusting. We make the mistake of not beginning early enough with children. Though they may become lax for a time, after they get a little older they will fall into line. Dr. Marshall believed that a great many gastrointestinal diseases and many diseases of the respiratory organs are due to infections from the mouth. He reported briefly several cases illustrating this point. A woman who had been suffering for three or four years with what she supposed was malarial trouble, and who had changed physicians a dozen or more times, getting no better, but being in wretched health, finally came to Dr. Marshall. She had salivary calculi all over her teeth, the gums were badly inflamed and could not be touched without bleeding, pus oozed up around the teeth. It was two weeks before he even got the teeth clean. He then gave her mouth washes and taught her to clean her teeth and to use a toothpick and to use floss silk, and in about four months she was well. The difficulty was entirely due to constant infection from the mouth. Another woman, pale and emaciated, said that she had not been well for four or five years, and that physicians did not seem to be able to do anything for her. She said that her mouth was sore and her teeth loose. She had a partial silver

plate with clasps in the upper jaw, and it was utterly buried with salivary calculi between the teeth. It was so bound in position by the calculi that it could not be removed. She did not know that she should remove the plate at night. She said that she had worn it for seven years without taking it out. She was suffering from infection of her mouth and tonsils. On cutting away the salivary deposit, the gum beneath the plate was found to be as raw as fresh beef; the mucous membrane was all destroyed. She recovered after several months' treatment. Dr. Marshall considered this another illustration of constitutional conditions coming from infection from the mouth. He has also seen many soldiers from the Philippines. The majority of these men are from the lower walks of life and have very little education—certainly no idea of hygiene except what is taught them after they come into the service. They know absolutely nothing of the care of the mouth; probably never even owned a tooth brush. It is a part of the dentist's duty to teach these men the use of the tooth brush. Those coming home from the Philippine Islands frequently have salivary deposits all over the teeth, the gums badly inflamed, and many of them suffering from pyorrhea. Some of these men are sent home with dysentery or diarrhea. Dr. Marshall said that a thorough cleansing of the mouth, the use of a proper tonic, and giving good mouth washes to keep the mouth clean and to tone up the tissues, have produced wonderful results in many cases of diarrhea. Some have been under treatment for four or five months; others eight or ten months; they usually become well finally. With those having dysentery it has not always been so beneficial. Some are markedly improved, and a few have been cured. Amebic dysentery cannot really be traced to infection from the mouth. Dr. Marshall believes that many of these gastrointestinal disturbances are due to secondary infections from the mouth.

Dr. Frank L. Platt, San Francisco, stated that he is particularly interested in the examination and care of the teeth of the children in school, though he does not know what course can be taken to bring about that much desired condition of affairs. He said that he was appointed on a committee to interview the Board of Education in San Francisco to see what could be done there, and he does not believe that he was ever treated more shabbily in his life, and he really started out with honest intentions. After reviewing the

work done in Europe and some of our eastern cities and states, the committee did not seem to be at all impressed with the importance of the matter. When Dr. Platt referred to the fact that several years before, the board had appointed an oculist to examine the eyes of the children in schools, it was insinuated that pecuniary profit had a part in the motives of the professions concerned. These bodies must be impressed with the importance of this work. Back of it all there must be a change in education; dentists must be better educated. With men and women who realize the importance of this specialty, and who are enthusiastic, there will be an impulse that will not be put down. Dr. Platt stated that he has spent considerable time in work along this line and is utterly disheartened to find how few men or women are really enthusiastic. Most of them are working for bread and butter. It is hard to arouse any enthusiasm, and I think the fault lies in the foundation —in the teaching. It is of vital importance to the coming generation of people in this and every civilized country that mouths be taken care of. If the authorities could be impressed with the importance of this matter so that they could not pass it over with a slur, then something might be accomplished. It might be a good plan for some of the profession to be elected mayors of cities. Back of it all, he said, there is the question of scientific education and enthusiasm of the student; that it may not be simply a means to an end, and that end bread and butter.

Dr. G. V. I. Brown, Milwaukee, declared that the stomatologist must himself be educated; the members of his profession must be better educated; the general practitioner of medicine should be educated in this direction; the people should be educated, and the patient should be educated. Dr. Brown said that when he hears discussions of this sort he always feels that some tribute ought to be paid to the men who for years and years in the face of great discouragement have patiently persisted and lent their best efforts to the fixation of one idea, that this branch of medical science needs special care and education, and that it is of unusual value to the human race. This can be accomplished, first, by elevating the science in such a way that scientific men can be made to understand that these things are true. Other people can be impressed by actual demonstration with the seriousness of these affections, and demonstration also of the simplicity of their correction at an

early period. Everybody knows in a general way the possibility of infection of the mouth causing serious disturbance, but they do not, and dentists do not, recognize these conditions in an incipient state. Patients with these disturbances come first to the dentist, and the dentist does not recognize them. Dentists can all recognize them when they have reached a serious stage, but they fail to understand early enough that they are serious conditions.

Dr. V. A. Latham said that a better medical training is needed, not a dental training. Dentists are all apt to become mechanical; they do not connect the medical work closely enough with the dental. It is like teaching students histology and pathology without anatomy; they do not get foundation principles, and in that way they miss the anatomic bearings to the detriment of all their work. Crowning, bridging, etc., are always taught because the dentist is supposed to replace lost organs and in that way to strengthen them; but he must first see that the primary organs are in good condition. Therefore, Dr. Latham thinks that some pressure should be brought to bear on the dental schools. She asked why dentists are the only specialists who are required to have a special degree, and why the dentist should be anything other than a doctor of medicine. Every man, Dr. Latham thinks, should be trained as a physician for dentistry, and then allowed to specialize; mechanical training is not the only thing. Her experience with girls about the age of puberty is that many cases of chlorosis come with inflammation of the gums and ultimately lead to pyorrhea. If the medical man could be trained in the early symptoms of pyorrhea, she believes that much good could be done. Dr. Latham declared that none of us know the etiology of half the mouth infections, and that it is only by the cooperation of both the medical and the dental branches that the best results can be obtained.

COMBINATION FILLINGS.

BY CLYDE DAVIS, B.S., M.D., D.D.S., LINCOLN, NEB. READ BEFORE THE NEBRASKA STATE DENTAL SOCIETY, AT LINCOLN, MAY 16-18, 1905.

The avalanche which has just passed, incident to the revision of the methods of inserting porcelain inlays, has swept a large number of the dental profession off their feet, and we are just recovering sufficiently in the valley below to poke our heads

above our icy surroundings, and ask ourselves and our companions if there is yet anything in dentistry worth considering other than porcelain.

I do not want to be understood as antagonizing the use of the porcelain inlay, for it is when rightly used a thing of beauty and a joy, for at least quite a while, and a dentist who has not incorporated this method in everyday practice has not rounded out his profession to its full measure of usefulness.

This passing whirlwind which has filled our eyes with pulverized porcelain, like many other periods of searching investigation along any one particular line, has brought to mind some facts developed collaterally with the main subject under consideration.

All inlays of whatever material are only a combination of filling materials so used as to take advantage of the good qualities of each material used and to minimize to the fullest extent the weak properties.

Since dentistry was raised to the dignity of a science there has been a diligent and searching investigation to discover or produce a filling material possessing all the virtues of every filling material combined in one with none of their objectionable features, and should such a material ever be discovered all materials now used with their varied methods of manipulation would in a season's time become obsolete, to be remembered only as a nightmare, and future generations would look back upon our struggling efforts with pity and speak of the "primitive days" when referring to porcelain, gold, amalgam, cement, etc.

But we are reveling in the dreams of a dental millennium, forgetful that we are still in the land of the living, face to face with disintegrating teeth and objectionable filling materials.

I believe that when we do find the much sought for "perfect filling" it will be in the combination filling of which the inlay and particularly the porcelain inlay is a good example.

We have but two examples of a single substance being used as a filling material—pure gold and pure tin, and these in many if not in all cases can be materially improved when combined with other substances.

However, since we have such varied conditions to meet in different mouths and even in the same mouth, as well as different positions in a given tooth, it is doubtful if the best results can

ever be obtained by the use of a single substance or a set combination of substances as an universal filling.

Porcelain alone as a filling is worthless, but combined with cement in selected places where virtues may shine and weaknesses be protected, it is as a combination filling without a rival.

Pure gold alone as a filling is good, but much better when one of the constituents of a combination filling, used with cement as an inlay of fused gold alloy, or built into a layer of soft cement, first using soft gold then cohesive foil, and where subject to abrasion finishing with gold-platinum foil. Here you have the principle of the inlay.

It is a combination filling magnifying the good qualities and minimizing the faults of each of the ingredients. The cement is adhesive, the soft gold gives close adaptation to cavity walls and margins, the cohesive gold resists lateral stress in contours and the alloy of gold and platinum resists abrasion. Your experience will readily suggest places where such a combination will give better results than any one of the substances alone.

We have demonstrated in many an old filling that gingival margins resist decay much better when covered with pure tin than with pure gold or amalgam.

The tin when used alone does not satisfactorily resist the stress of mastication, hence we have the suggestion of the combination filling, covering the base of the cavity and particularly the gingival margin with pure crystal tin, finishing with the different golds, as above, or even amalgam as the case demands.

The amalgam filling is itself a combination filling and the better amalgam combinations have stood the test of time, loved by some, used by many and respected by all. However, if it is further combined with pure tin, as mentioned above, or with cement, thus bringing into it the principle of the inlay, its values are materially enhanced.

The combination with cement prevents discoloration of tooth substance and adds adhesion to the usual mechanical retention, both of which are points not to be ignored.

In the final insertion of a combination filling or inlay wherein cement is one of its constituents we should remember some facts regarding cement which the use of the porcelain inlay has forced on our notice.

First, if this is the fact that the less the quantity of cement and the greater the pressure under which it crystallizes, the stronger its adhesion. Second, that cement expands when so-called "setting" takes place, hence the filling must be permanently fixed and unyielding before this crystallization of the cement begins. Therefore, when combined with amalgam an exceedingly slow setting cement should be used, topped with a very quick setting amalgam, so that the amalgam may be one solid, unyielding mass held in the cavity by the usual mechanical retention.

The expansion of the cement when it starts to set will produce pressure in proportion to the expansion, a condition to be sought. The small quantity of cement, another condition conducive to great adhesion, should be obtained by burnishing the first portion of amalgam or gold as close to cavity walls as possible, giving the appearance of forcing all of the cement from the cavity. Again we have the inlay. Again we have the combination filling.

We are still looking for the perfect filling material. Are we not to find this in a combination? Or better, are we not to find the perfect filling materials in a study of the possible combinations of the various materials at hand so assembled as to take advantage of their good qualities while minimizing their faults?

DISCUSSION.—*Dr. A. H. Hipple,* Omaha: In so far as the principles of combination fillings have been enunciated by the essayist, I believe he is correct. In my opinion, any method that seals up hermetically makes a better filling than a method which does not. In the use of gold or metallic filling alone, it is questionable whether that will, in most cases, seal up all the openings. We simply close the cavity mechanically. By means of cement we do absolutely seal up the openings, and owing to that fact, we have better success with this method of filling than any other made from one filling material only. If we could get a cement which is absolutely insoluble and make it the color of the teeth, I believe it would be the ideal filling. In the absence of such a material we have to modify our practice by getting the good qualities of cement and bringing them into use, at the same time combining them with the good qualities of other materials. I think there is food for much thought in what has been said, and believe we can all improve our practice more or less by using combination fillings at times.

Dr. C. M. Work, Ottumwa, Ia.: The paper under discussion was very timely, but the essayist did not say anything we could not sanction. The first thing that ever brought this combination filling to my mind was when I started out in a little town. One afternoon I was making two gold fillings, such as we have all seen made. In burnishing one of them as we did in those days I burnished it out of the cavity. Having heard about inlays, I decided to cement it back in place. It was not specially made for inlay work, but nevertheless it was cemented to place, and that was in 1894. The other filling that stayed in and resisted all the power I used in the burnishing is there yet. The one tooth is as black as can be around the filling, but the one I burnished out and cemented back in place is in there yet and doing good service. They are both marred on the surface, showing a good deal of use. This difference in conditions must be on account of the cement in sealing the cavity margins. While I do not put in my fillings that way now, I believe that a great many of those I have made in the last few years and will make in the years to come, will be a great deal better if I do burnish them out and have to reset them with cement.

Dr. Sherwin: It does not seem to me that cement under a gold filling is necessary to preserve the tooth. If the margins are exposed, the cavity well prepared, and the gold properly condensed and well finished I do not believe cement is necessary.

COMMON GROUND FOR MEDICINE AND DENTISTRY.

BY FRANK L. PLATT, D.D.S., SAN FRANCISCO. READ BEFORE THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, 1905, AND PUBLISHED BY COURTESY OF THE JOURNAL OF THE ASSOCIATION.

The recognition of dentistry as a specialty of medicine by the American Medical Association and the International Medical Congresses, marks one of the happiest epochs in the history of both professions, for it has opened the way for a mutual understanding of conditions and study of theories beneficial to both, and destined to promote in no small degree the health and happiness of the human race.

The goal of both professions is practically identical, embracing

as it does all honorable means for the relief of suffering and for the cure and prevention of disease.

Within comparatively few years, the medical profession has made giant strides in preventing epidemics of plague, cholera, yellow fever and malaria, and is to-day waging a relentless war, and one which will ultimately be successful, against the greatest of all scourges, tuberculosis.

Dentistry is no unworthy member of the great medical family, and many of its best and brightest minds are striving with unremitting toil to find means for the prevention of dental disease, and as their efforts are crowned with one success after another they will have but moved further along the common highway traveled by all the healing arts.

The fact that medical science in its various branches is putting forth its latest, and perhaps its greatest, efforts in the direction of the prevention of disease is the very best evidence of the progress and utility of this branch of applied science.

That such effort is demanded and intelligently received by the public furnishes encouragement for renewed effort, and demonstrates the fact that humanity is gradually coming to believe that the prevention of disease is even a greater and more valuable scientific triumph than its alleviation and cure. Admission of the importance and truth of this growing belief leads at once to the consideration of the subject of this paper.

It is an unfortunate fact that the course of instruction in medical colleges, except in a few instances, does not embrace a fairly comprehensive study of dental pathology and hygiene, for they have a direct bearing on other systemic conditions and play a most important part in the health and development of the individual. It would be well also if more particular attention were paid to the diseases of the eye and ear, and the gastric and intestinal disturbances of infancy and later life, as related to diseased conditions of the teeth and oral cavity, in our medical colleges.

The possession of a more general knowledge of these subjects by the practitioners of medicine and dentistry, combined with a greater sense of the obligation of trained minds to impart some of their learning to those dependent on them and less well trained, would accomplish much toward combating disease and bettering the general condition of the human race.

Considering the fact that human beings have inhabited the earth for perhaps fifty thousand years or more, and also that they have been suffering from various conditions of dental disease ever since Adam cut his teeth, it is astonishing how little general knowledge prevails regarding these organs, so essential to the health, development and appearance of mankind. Scarcely one mother in a hundred knows how many teeth there should be in the temporary set, and still fewer know when they should erupt or when they should be lost; and few, few indeed, are the parents who know that the temporary teeth play perhaps a greater part in the development of body and mind than the permanent teeth, and should receive from the day the first one appears, the most painstaking care tending to their preservation.

That expression so common in dental offices, "Why, doctor, that's only a baby tooth, you don't think that ought to be filled?" should be eliminated from the vocabulary of every parent, and there should be heard in its stead, "Doctor, I want my baby's teeth taken care of, every one of them, just as long as he needs them."

How few people we know who have reached maturity without the loss of one or more teeth. It was "only one tooth" neglected until it ached, and then it was extracted. Only one tooth, but its loss eventually disturbed the arrangement and utility of half a set of teeth. This leads to half mastication and half digestion, and whole indigestion.

Parents of all classes, from the dirty and ignorant to the refined and educated, bring their babies two, three or four years of age to the dentist, with their teeth even at these early ages in all stages of disease. Some have only a few simple cavities, others have scarcely a sound tooth left; with exposed pulps, putrescent pulps, and even a few alveolar abscesses, discharging perhaps a spoonful of pus a day into the oral cavity.

The mother wonders why the baby does not grow, why he does not digest his food, why he does not sleep nights. The wonder of it is that the baby lives at all, and many of them do not live very long, and the cause of death may be traced right back to the septic condition of the oral cavity, back to the mother's ignorance, back to the fact that no one ever told her to care for her baby's teeth, not even the family physician who was present when the

child was born, who attended him when ill during the period of dentition, and who should have known, and who should have seen that the mother knew how to keep the little mouth and teeth clean, and should have taught the importance and necessity for doing so. It is undoubtedly a fact, that many of the diseases of childhood, other than those considered incident to dentition, have their origin in diseased conditions of the oral cavity; including, of course, dental caries; and it is no less true that throughout life many neurotic and gastric disturbances may be traced directly to the ignorance and neglect of the sufferer in regard to the care and preservation of his teeth. People, as a rule, do not first demand dental services except for the immediate relief of pain; a few, it is true, have learned by previous sad experience that it is well to consult a dentist once or twice a year to have their teeth examined and treated if necessary; and these few, although they do not know it, have reached an unusually high degree of human intelligence. They are well along on the highway of knowledge leading to that remote but beautiful goal when people will understand that it is wiser to employ physicians to keep them well than to cure them when ill. Since we as professional men know these facts, realize their importance and see every day the sad results of ignorance and neglect, since we know that without good digestion there cannot be good assimilation, and without both, good health and good development, since we know that good digestion depends very largely on a proper supply of food, clean food, passed into the alimentary canal through an oral cavity free from septic conditions and provided with the proper organs for its mastication and insalivation, is it not a duty we owe to ourselves and to humanity to impart this knowledge to those who so sadly need it?

This is the duty first of the physician, for his relations with the family are necessarily more intimate and begin at an earlier period than those of the dentist, and second, of the dentist, for by timely advice he may often prevent a repetition of the trouble in regard to which he has been consulted.

It is on this common ground, the instruction of the public in regard to the value, care and preservation of the teeth, and the prevention of disease, that the professions of medicine and dentistry may join hands and work together for the good of humanity and the honor of themselves.

DISEASES OF THE ANTRUM OF HIGHMORE.

BY F. M. BARNES, D.D.S., OMAHA, NEB. READ BEFORE THE NEBRASKA STATE DENTAL SOCIETY, AT LINCOLN, MAY 16-18, 1905.

In this paper upon diseases of the Antrum of Highmore it is not my intention to set forth any new thoughts but to briefly consider the subject in a general way and discuss some of the chief points of interest.

I prefer to classify the disease as follows, rather than use the classification given by some authors.

1. Catarrhal inflammation, acute and chronic.
2. Suppurative inflammation or purulent empyema, acute and chronic.
3. Atrophic.
4. Necrosis of bony walls.
5. Tumors or mucocele.
6. Specific.
7. Traumatic.

Etiological factors. Much has been said by many notable specialists upon this subject. Some believe that the nose and some that the teeth are the most frequent causative factors, but from the opinions of some of the best authors and my own experience I find the teeth to be the most prominent factor in the disease.

Marshall classifies diseases of the teeth which may produce inflammations of the antrum as follows,

A. Devitalized teeth.
B. Alveolar abscess.
C. Malposed teeth.

A. Devitalized pulp in the root of a tooth which penetrates the floor of the antrum may cause septic inflammation. Tilly says his experience leads him to believe that dental caries is by far the most frequent cause of chronic antral empyema. Although the crown of the tooth may seem healthy, there may be disease at the roots carrying infection to the antrum.

B. Alveolar abscess occurring between the roots of an apparently healthy tooth or between the roots of healthy teeth in the region of the bicuspids and molars, may establish an inflammation in the antrum, on account of the floor being thin and the abscess pointing into the sinus.

C. Malposed teeth may cause septic inflammation from being

unable to take their normal position in the arch and being in close relation to or protruding through the floor of the antrum.

Hypertrophic and atrophic rhinitis may cause antral disease by pressure of the middle turbinate against, or stenosis of,, the antrum maxillare due to a thickened mucous membrane cutting off communication between the antrum and nasal passage.

Nasal and antral polyps are also frequent causes. Some cases may also be traced to discharges from the frontal or ethmoidal sinuses entering the normal antral opening or by abnormal communication. Powder insufflations and foreign bodies are not to be forgotten.

Traumatic injury in the maxillary sinuses is not very common, but occurs with crushing injuries and gunshot wounds, causing fracture and comminution of maxillary bones.

Symptoms. These vary with the intensity of the disease and the potency of the ostium. Acute empyema is usually attended with severe pain and often neuralgia, tenderness of the teeth and palate on corresponding side, a feeling of fullness in the cheek, sense of pressure and even protrusion of the eyeball. The corresponding nasal passage may or may not be patent; in case it is characteristic pus is likely to be found oozing into the middle meatus, especially if this pus be wiped away and the head inclined to a position favoring exit of the pus through the ostium. If the escape of the secretions from the antrum be prevented and gradual accumulation takes place severe symptoms are likely to follow, such as thinning and distension of the antral walls, thus allowing the swelling to become noticeable in all directions. Palpation reveals a parchment like crepitation of the walls, and an inflammatory condition of the overlying tissues, congestion and bulging of the eyeball from thinning of the floor of the orbit and protrusion into the orbital cavity, causing paralysis of the optic nerve from pressure and consequent amaurosis or amblyopia. Soreness and elongation of the teeth on affected side with bulging of the palate and extremely sore gums are also in evidence. Absorption of the walls goes on and the secretion finally breaks through into the soft tissues in the direction of least resistance, which is frequently through the palatal process into the mouth. The formation of pus in acute cases is attended with chills and elevation of temperature and general systemic weakness.

The chronic inflammations are seldom attended with systemic conditions except during the presence of acute exacerbation and indeed most of the local symptoms may be absent or not prominent where there is little or no stenosis of the ostium. In the chronic form we may have only a tenderness along the alveolar ridge or over a tooth or in the region of the middle meatus of the nose. Discharge into the nose and consequent odor may or may not be noticeable, the patient complaining only of soreness of a tooth and a sensation of something moving back and forth in the region of the antrum with a backward and forward movement of the head. However, the discharge is usually a prominent symptom, varying in amount from a slight to a considerable quantity, and may bring on gastric disorders from the patient lying on the unaffected side at night and swallowing the secretions, thus producing nausea and sometimes vomiting in the morning.

Diagnostic signs. These have mostly been considered in the symptoms. A carious devitalized or abscessed tooth or abnormal conditions in the nose should be looked upon with suspicion.

Malignant and benign tumors and bony excrescences may be confounded with suppuration of the sinus but differential diagnosis may usually be made by exploratory puncture or incision, or by an electric mouth lamp being placed in the patient's mouth with lips closed and the room darkened. With normal tissues the light will be quite readily transmitted through the cheeks and lower eyelids, while if the antrum is filled with a solid tumor the light will be entirely obstructed and in case of thick mucus or pus the light will be only partially obstructed. I consider the electric lamp very useful and valuable in diagnosing tumor growths from inflammations of the antrum, but for diagnosing inflammatory conditions attended with mucus or pus from normal conditions I do not think it is positive. This is owing to the fact that light transmission would not be the same normally, if there was a difference in the thickness of the bony walls of the two sides, which is not uncommon, thereby making diagnosis uncertain if the wall on the suspicious side was a trifle thickened, in either case the light being impeded, whether from the presence of secretion or thickened bony wall.

Treatment. In simple catarrhal conditions of nasal origin this can sometimes be accomplished by applying adrenalin chlorid or an

8 per cent cocain solution to the ostium and then relieving the obstructed condition and it may also sometimes be irrigated from this natural opening. Emphysema, which is sometimes classed as a disease but which I believe to be only a condition, can nearly always be relieved in this way.

The treatment in all cases is,

First. Remove the exciting cause.

Second. Complete evacuation of cavity.

Third. Attain perfect drainage.

If the disease is of dental origin the offending tooth must be properly treated or removed. If the tooth is beyond hope of restoration it may be extracted and the alveolus enlarged and opened into the antrum. This is a very satisfactory method of securing removal of the cause, evacuation of cavity and drainage.

Other methods of opening the antrum are to open through the canine fossa between the roots of the second bicuspid and first molar on the side of the process, or the sinus may be opened through the inferior meatus in the nose.

An important point in operating on cases of long standing is to make the opening large enough to examine the interior thoroughly with the little finger for polyp growths or bony spurs and partitions which might provoke secretion or cause retention of the fluids. If bony growths are found they must be curetted out and any polyps removed with snare or suitable instruments.

I use for irrigating the cavity Glyco Thymoline ɪ℥ to warm water normal salt solution IV to VI℥, following this with Dioxogen and warm normal salt solution 1 to 5 and this in turn followed by the first solution. The cavity is then thoroughly drained and sprayed with a 3 per cent solution of camphor menthol in alboline or glycerin and a wick of sterilized gauze placed in the opening. After the fetid odor abates the Dioxogen solution is discontinued and the Glyco Thymoline solution is used as a spray, for this cavity being intended for air and not for fluid the spray will cleanse it with less irritation to the tissues.

Powder insufflations, such as aristol-bismuth, etc., are objectionable unless the powder is thoroughly removed on the occasion of each subsequent treatment, otherwise it crusts together and irritates the membrane. The treatments may be made twice a day at first

and diminishd as the discharge decreases and great care must be exercised not to overtreat the condition and thus keep up an undue irritation. I prefer the gauze for the opening because it keeps out food particles and mucus from the mouth and permits the large opening to heal slowly while drainage is constantly kept up as with the tube. Preceding each treatment of the cavity the nose and mouth should be thoroughly sprayed with the same alkaline solution as mentioned above and the patient instructed to not blow the nose with force, this act tending to force mucus into the antrum if the ostium is patent and so increase the irritation.

DISCUSSION.—*Dr. Clyde Davis,* Lincoln, Neb.: The antrum is the field which will always be disputed territory. Physicians claim it is "rhinological" and dentists that it is "odontological." It is possible that we all at times meet with opposition in the treatment of this cavity. It pleased me to hear the doctor's classification, and perhaps a little more study of it would be interesting as it is a new one, constituting a rearrangement of classifications which have been heard or read about before.

Dr. Barnes, closing discussion: I have nothing further to say in closing this discussion except as to the packing of the antrum. This feature I did not make very specific, nor did I say much about it. In cases of empyema where it is necessary to curet the walls of the antrum it is of course necessary to pack it in a proper manner. The packing of this sinus with all kinds of gauze regardless of conditions sometimes does more injury than good. Not long since I saw a case of antrum disease which another dentist had kept packed tightly for several days with iodoform gauze. As a result a typical case of iodoformism in the antrum had developed. I do not think packing is good treatment except as mentioned above.

As to packing this cavity with gauze it should not be packed tightly, but with simply enough to loosely fill the cavity and so it will not work out nor cause irritation. I use boric acid gauze or dust cavity with aristol and pack with plain sterilized gauze. Instead of a tube in the opening I use a narrow piece of gauze about three inches long which is rolled into a wick. This is folded in the middle and the ends passed into the antrum. This keeps the opening patent, prevents food from entering and is a good method of drainage.

WHAT I HAVE LEARNED FROM THE STATE DENTAL MEETINGS.

BY E. A. MESERVEY, D.D.S., KEARNEY, NEB. READ BEFORE THE NEBRASKA STATE DENTAL SOCIETY, AT LINCOLN, MAY 16-18, 1905.

My purpose in writing this article is to show to you the value of State Dental Societies. I wonder how many of you go home and sum up what you have learned and the amount of good you have received from these meetings?

When I paid my annual dues to the treasurer last year, he said to me, "Doctor, I see you are the only dentist in Kearney." I replied, "I think you must be mistaken. If you should read our daily papers or take a walk through our principal street you would learn that there are others." His answer was, "Well, you are the only one I have on my books."

That is what prompted me to write this paper. If Kearney has five dentists and only one is a member of the State Dental Society there must be other towns showing equal or worse proportions.

Why is it that more do not attend these meetings? Surely not because there is nothing of interest here. Possibly they have not been sufficiently urged; possibly they have not been told that it is a place where they can both gain and impart knowledge. As for myself, I do not remember whether I was asked to join or not. I do remember being so anxious to attend that I started in advance, and on discovering my mistake had to return home and wait another week.

The meeting that year was held at York, and my only recollections are of a lot of dentists—jolly good fellows most of them—and I was one of them.

A small town is a poor place to hold a meeting, due principally to lack of material to work on. In my opinion, the cities and largest towns are the only places where a successful meeting can be held, for they have advantages that the smaller places lack. Dentists from country towns combine business with pleasure while attending their annual society meetings, and the larger places have the desired opportunities.

The Omaha contingent at York was successful in securing the next meeting, and I was there prepared to do my share and absorb a little more knowledge. I had a paper on "Cleanliness,"

which, however, I did not read, and a clinic, "An Alloy Filling, Black's Method of Preparation." A dentist from Council Bluffs, an elderly man, was a willing subject for my demonstration, and a very good one. He was either immune from pain or there wasn't any—or he may have been a Christian Scientist, I can't say which. Anyway, I was able to chisel and hack away to my heart's content, and I finally formed a cavity that was perfect in every detail. Extension for prevention, flat base, parallel walls, steps for retention were all there.

During this time I was frequently interrupted with "What's that, a new kind of rubber?" or "Where did you get that dam?"

Just before commencing to operate I discovered that I had forgotten my rubber dam, and therefore went out and bought some. It happened to be something new, an aluminum finish on one side, which was quite a novelty to those who happened to be watching. This gave me cause to think that I was exhibiting some new dental ware instead of an alloy filling, for about nine out of every ten would ask about the rubber, while the tenth man asked to see the cavity preparation, which was willingly shown him. I pointed out the reason for extension for prevention, flat base, step, etc. I had something good and knew it, but outward appearances were against me, for I was young in looks, fresh from school, and from a country town, but happily for me I was unconscious of all that.

But here is the point! I venture to say that of the 150 or 200 dentists who were present there were not over 25 who had ever seen a cavity prepared according to the principles of Dr. Black. The secret of it all is, I was demonstrating an amalgam filling; two-thirds of our fillings are amalgam and two-thirds or more of us neglect such fillings simply because we are too poorly paid for them—any way to get them in, and the quicker the better.

We had with us that year Dr. C. N. Johnson of Chicago, famous for gold fillings. The gold filling he put in made an indelible impression on me, for I took it home and suspended it above my chair, where it has hung ever since. When putting in gold fillings a mental picture of that filling is constantly before me, and it has been the means of urging me to better work, and I only hope that others have received a like benefit.

How many of you give yourselves credit for what you learn at state meetings?

I remember at one of our meetings Dr. McMullen of Kansas City had a card of curios consisting of crowns, bridges, etc., of an old date, some of them very crude and coarse of construction. Under each specimen appeared the name of the man by whom it had been made. In reply to questions he said they were from some of the best men in the profession. "The most of these specimens," said Dr. McMullen, "were made years ago. They look a little crude in comparison with the work being done at the present time. These same men are doing entirely different work now. It not only shows advancement in methods, but advancement in workmanship. Several of the pieces that you see on that card are my own, and I am not ashamed of them."

Here was a lesson to be learned, and a good one. It taught me not to be ashamed of the work done in the early stages of my dental career. It gave me courage to know that other men had had failures and had overcome them. It made me feel that I was not alone with my troubles and difficulties. Dr. McMullen further said: "These specimens are not from the poor men of the profession, but from some of our best."

Every man has not the courage and frankness to display his mistakes to the public in general. It is the constant and never-ending determination to improve with each day the work of yesterday that gives you courage to display your faults. Study well your mistakes and failures and some day your handiwork will have written on each piece the word "victory" and the world will be reading it.

Since becoming a member of the Nebraska State Dental Society I have attended all the meetings except two, but it is not my intention to give a detailed account of each meeting, nor of all that I have learned, but of the things that have impressed me most and that have given me the most good.

I have a mental picture of two men working side by side and at the same kind of work, one a beginner and the other an old timer, to use a common expression. The work was porcelain inlays. I was attracted to the beginner by his energy and enthusiasm. He was heart and soul in his work and was more than anxious to enlighten those who were seeking information. With the old timer it was different. He had passed that stage of enthusiasm and was now high on the ladder of fame. Victory and success were

his, for his slow and certain movements showed plainly that he was master. He had a purpose to fulfill. Before him was human nature deformed and broken down by disease. By the aid of instruments he had gotten rid of disease, and to repair the broken-down structure or process was now his purpose. I had not long to wait, for he soon had molded into shape an exact counterpart of nature herself, and the restoration was marvelous.

The sculptor and painter for centuries have been trying to reproduce and make lifelike human nature, but all have failed. This wonderful piece of art, for art it was, was accomplished by one from the dental ranks and we should feel proud of the fact.

Let us go back to the beginner. We find his restoration not so perfect, but the energy and enthusiasm which he displays will in time bring perfection.

The lesson to be learned here is with the beginner. Why do we not make the start? Why do we sit idly by and let others crowd us out? The young man who was working by the side of the one with fame and experience was a beginner and his work a little crude in comparison, but ten years of active work with that enthusiasm will place him where the older man now stands, while you and I will be still looking on.

Inlay work has a place in dentistry, the same as crown and bridge work, and the man who fails to make the start will not be called progressive.

THE PHYSICIAN AS A DENTIST.

BY CALVIN WILLIAM KNOWLES, M.D., D.D.S., SAN FRANCISCO. READ BEFORE THE SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION, 1905, AND PUBLISHED BY COURTESY OF THE JOURNAL OF THE ASSOCIATION.

The physician had practiced his dental specialty for many years previous to the establishment of a dental college, which took place in about the year 1839. When conditions pertaining to the medical side of dentistry arose, in years gone by, it was customary for these cases to be referred to the medical specialist or general practitioner.

Dental colleges being organized, and a more thorough medical knowledge being required, it was not so necessary for the opinion

of a medical man in cases which involved the medical side of dentistry.

Dentistry is regarded by some as an art or science, rather than a specialty in medicine, for the average dentist is not a physician, has received no medical education whatever, and practically knows nothing about general medicine, or else has a very superficial knowledge of it. It will be useless for me to discuss or to dwell on this point, as it has been referred to and rehashed for a number of years, without really coming to any definite conclusion in the matter.

Dentistry as practiced by some men is a specialty in medicine. Dentistry ought to be on the same footing as medicine, that is to say—educational requirements, a four years' course and an M.D. Not until these are required will a dentist be recognized on the same footing as a physician.

Physicians as a rule regard dentists as mere mechanics, or men who have received a smattering of medical education. Do you wonder why we are so looked on!

I am sure it was a great mistake when dentistry branched out for itself, and I am afraid the day is far distant when we are going to shake hands with our brother medicos and be licensed by a medical board, although I hope the day will soon come.

You ask the question: Why should a dentist be a physician? First, because he would have an accurate knowledge of medical science, and would be able to cope with many diseases, and recognize many conditions of which he was ignorant before. Second, when he sees his patient he will recognize his condition, note the condition of the heart, pulse, etc., or whether a contagious disease be present. Third, the benefits from the training he derives and the advantage his knowledge is to his patients.

The advantages of the physician-dentist, as I may term him, are as follows: Being an M.D., he is on a rank with all medical men, providing he is a graduate of a regular recognized medical college, and a licentiate of the state in which he practices.

The prestige which goes with the degree is of value not only in the medical profession, but also in the dental. One's knowledge being superior, one's work and one's fees will be superior. People will willingly pay more for the services of one in whom they place much more confidence.

Are not these sufficient reasons for a broader medical education? I am sure that if dentists had the opportunity and could spare the time they would most certainly take a medical degree.

The word stomatologist takes the place of the word dentist in being a newer and more up-to-date one, the use of which has become quite common in the larger cities. By the word stomatologist we understand one treating diseases of the mouth, and especially the teeth. It perhaps sounds a little more medical than the word dentist, and would fit the physician-dentist a little better than the ordinary word dentist.

In ancient medicine the physician practiced the dental specialty. In an old manuscript consisting of over 100 pages a most interesting account of the anatomy, physiology, medicine, materia medica and therapeutics is given. The following are examples of some of the aphorisms given in the manuscript:

"There are three bones in a man's body, which when fractured will never unite again, and neither of these exists when a man is born, namely, a tooth, a knee pan and the os frontis.

"To extract a tooth without pain. Take some newts, by some called lizards, and those nasty beetles which are found on ferns in the summer time. Calcine them in an iron pot, and make a powder thereof. Wet the forefinger of the right hand, and insert it in the powder, and apply it frequently to the tooth, refraining from spitting it off, when the tooth will fall away without pain, it is proven."

Bleeding and local applications, such as poultices and counter irritants, are frequently alluded to. The exact date of the manuscript is not known, but it was probably written about the end of the fifteenth century. So you see the early physician practiced this specialty also.

Dentistry is one of the oldest professions, dating from the time when people were placed in front of the temples in order that they might gain relief. All down through the different ages literature has been contributed by the different observers.

Dental surgery has always been associated with education and scholarly men, and not with mere mechanics or tonsorial artists.

Our literature of the present century is elegantly written and illustrated with beautiful pictures, giving in detail the different oral deformities, and the modes of treatment by surgical or me-

chanical means. In our own United States there seems to have been in the last fifty years a very rapid growth and high degree of development in dental science, as compared with other countries. The percentage of qualified persons practicing dentistry is fully as large as those in other similar callings of life. It is stated that after five years only about 20 per cent remain in practice, and that the qualified and successful are only about 5 per cent.

Dentistry as a science and art is a noble calling and is worthy of the best efforts and of the finest minds.

STOVAINE.—This preparation, as a local anesthetic in nose and throat operations, has been employed by Coakley. He sums up his experiences as follows:

1. That stovaine as a local anesthetic is apparently equal to cocain.

2. That the time necessary for acquiring local anesthesia is that of cocain.

3. That it apparently does not contract the nasal mucous membrane to so great an extent as do similar solutions of cocain. This is at times a disadvantage, when the nasal passages are desired to be opened for more thorough inspection of the cavities; on the other hand, it is oftentimes an advantage, as in snaring off redundant tissue, by not too greatly shrinking it, and therefore, making it more easy to remove.

4. Stovaine does not produce nearly so great a constriction in the pharynx as that which is produced by cocain. In this respect it has a decided advantage over cocain, especially in those patients to whom the symptoms of constriction with constant desire to hawk and remove a supposed foreign body are distressing

5. Some of the patients have complained that solutions of stovaine are more bitter than similar solutions of cocain.

6. We have seen no toxic effects following the use of stovaine; there have been no secondary headaches or feeling of lassitude after the local anesthetic effect of the drug has disappeared. I am also of the opinion that the secondary swelling of the mucous membrane, following the use of stovaine, is less than that which occurs when cocain is employed.

7. It is but fair to say that during this period, when cocain was employed, there was no case of marked cocainism. For the sake of comparison, in all cases where there were two operations done on the same person, stovaine was used on the one side and cocain solutions of the same strength were employed on the other. Careful questions were asked of each patient to determine which was the better anesthetic and which gave the least disagreeable symptoms.—WILLIAM E. SAUER, M. D., *Interstate Medical Journal*.

Digests.

DENTAL DETERIORATION AND ITS CAUSES. By B. J. Rodway, L.D.S., Eng. Read before the Manchester (Eng.) Odontological Society. In the address of our president last year he said on commencing: "I have chosen to address you on matters which may serve the purpose of themes for elaboration and discussion at future meetings." The Council, calling this to mind, suggested to me that I might read a short paper on one of the points mentioned, namely, the sad deterioration which is taking place in the condition of the teeth of the children, and, of course, the people generally, of this country. The predominating thought in my mind in acceding to the suggestion is not that I am in any way qualified to make any original statements on the subject, for there has been so much literature penned upon it that such attempts on my part must always of necessity be futile, but rather to notice and remark upon several points which are familiar to us all, and which appear to me of sufficient importance and interest to be the subject of a discussion by the members present. My object is to bring the several points before your minds, that they may be noted by you, and enlarged upon in the discussion.

Few words, if any, are necessary to remind you of the prevalence of a most unsatisfactory condition in the mouths of the majority of our school children. In an "unattended" poor law school in which I examined about 250 children this year, I found that for every hundred mouths, temporary teeth to the number of 105 were carious, without needing extraction, while 137 required extraction, and that permanent teeth to the number of 99 were carious, while 59 were either already extracted, or were in sore need of extraction. Therefore in the mouths of these hundred children, 399 teeth were defective. This, as I said, was a poor law school, and according to many investigators the poor law school presents a favorable aspect when compared with one of a better class. Of some 1,200 boys of an average age of 13 years, who passed through a public school, only three in every hundred presented sound dentitions. Another striking illustration is that afforded by the returns of the causes of rejection of recruits for the army. In a memorandum presented to the Royal Commission on Physical Deterioration, the Director-General of the Army Medical Service says: "But with

regard to the loss of teeth by decay it must be pointed out that the numbers rejected on this account during the past four or five years have shown a steady increase until this cause of rejection has come to regularly occupy a high place on the list." This increase is probably due to the medical examiners placing a higher value on the necessity of a sound dentition, but the numbers of the rejections on this account emphasize the prevalence of unsound dentitions. In 1902, the number of rejections from this cause was 49.26 per 1,000. When we remember that these youths had already passed through some weeding out process, the figures begin to look more striking. Unsound dentition is the cause occupying the second highest position on the list of causes of rejection; that of defective chest measurement being the highest.

Realizing the condition, are we able to assign a cause for it? We know that dentistry has now reached a high place as a finished art, and that many things are possible in the way of dealing with carious conditions when they present themselves. This is well, but must we not endeavor to go farther and try to find a cause for this widespread disease, so that, knowing the cause, we may treat it and thus help towards an improvement in the future?

I will state briefly the views expressed in our text books, and the evidence before the Royal Commission on the subject.

TOMES, in his "Dental Surgery," says: "There appears to be no room for doubt that increased civilization predisposes to the occurrence of caries, though as yet it is uncertain in what way it does so." And, later, he says: "That caries is an effect of external causes in which the so-styled vital forces of the individual play no part." I hope to show that I am convinced that the vital forces, such as I understand them, do play a part in the predisposition to caries.

SEWILL, in his "Dental Surgery," says that "the predisposing causes of caries are (1) innate structural weakness and defects in the enamel; (2) vitiation of the buccal secretions; (3) crowding and irregularity of the teeth; that the immediate cause is the lodgment of acid or acid forming food on the surface of the teeth, or within defective spots, pits or fissures inherent in the enamel." Talking of the origin of ill-made dental tissues, he says: "There is a gradual decrease in the size of the jaws through savage and primitive races to those of the highest civilized types, and there

seems good reason to believe, although it has not been demonstrated, that the teeth are of relatively inferior structure." This latter statement seems to me very true, and it has been my endeavor in this paper to show to some extent why they are likely to be of inferior structure.

In the evidence given before the Royal Commission, on the dental deterioration which is so apparent, it was stated that the acuteness of the evil varied very much, and that it might, in some cases, be affected by local causes.

Professor Cunningham, after affirming the indirect effects of the shortening of the jaw, had no difficulty in assigning the real cause as being due to the change which had taken place in the character of the food in common use.

Sir Lauder Brunton laid great stress on the fact that dental caries is due to the cessation of the use of foods which require good mastication, and added that the soft foods were more likely to leave particles behind which cause decay, and this was the view emphasized by a succession of witnesses, lay and professional.

Mr. Dolamore, who attended on behalf of the British Dental Association, said that he had no doubt that bad teeth were a condition of the feeding that accompanies high civilization. The ruder and coarser foods at one time in use not only kept the jaw in use during the plastic period of its development, but had the effect of a tooth brush in keeping the teeth free from the settlement of toxic agents. On the vexed point of the presence of sufficient lime in the teeth, Mr. Dolamore agreed that, as a matter of fact, caries is just as often found in teeth with their proper elements of lime, as in teeth which are defective in lime, and stated that so far as chemical analysis went, there was not much difference between what are called hard and soft teeth, but he seemed to think investigation into the character of the enamel might produce different results.

I would like to hear the opinion of some of our longer experienced members on the point that caries occurs just as often in teeth which have their proper elements of lime as in teeth which are defective in lime. It has always seemed to me that there are so many of the soft variety of teeth prevalent in people where dental deterioration is marked, and that in races where sound dentitions are the rule, and in the skulls in our museums, the teeth appear to be of the yellowish hard looking variety. We have all often seen teeth

which have obviously been subjected for years to the presence of deposits containing microorganisms, which have withstood the effects of such presence, and these teeth are, as far as my experience goes, invariably of the yellowish, translucent, strong-looking variety.

On the other hand, are there not innumerable instances of mouths with the teeth of the whitish soft looking variety, in which almost every tooth is affected with caries? In the numerous instances in which the six-year molar erupts with the crown already carious, is it not true that what enamel there is left unaffected with caries is of the soft variety? In the introduction to Smale and Colyer, 1893 Edition, it is said "There are mouths met with, both among the poor and also among the rich, free from dental caries; mouths in which the structure and position of the teeth are so perfect that they are able to resist all local causes of caries, and remain throughout life perfect and free from disease, and this, as in the case of the poor, where no cleanliness has been practiced. Mouths are seen in adults that have never had a tooth brush used to the teeth, and which, in spite of all hygienic disabilities, have remained free from decay to the end. It is evident, therefore, that perfectly developed teeth are capable of resisting both the action of acids as well as the presence of microorganisms.

In the report of a recent Admiralty and War Office Conference it was held that deterioration of the teeth is intimately connected with a variety of intricate causes affecting the general health of the nation, but that malnutrition plays but a small part in the production of dental caries compared with the more common use of foods which readily undergo fermentation, and that it is neglect to keep the mouth clean that is chiefly responsible for the decay of the teeth.

The conclusion has been forcing itself upon me that malnutrition at the critical period when the teeth are being formed plays quite a large part in the production of caries, that it plays in fact even a larger part than the keeping of the mouth clean by artificial methods or by hard foods. I have been struck with the fact that in the mouths of children perfectly innocent of the use of a tooth brush (and I have had the opportunity of seeing many such children), where there have been no defective teeth, there has been very little deposit on the teeth, but where there has been even only one temporary tooth defective, then there has been a dirty mouth.

I think that if all the teeth are sound they will be used, I won't say sufficiently to keep them scrupulously clean, but sufficiently to enable them to contrast very favorably with poorly formed teeth which are regularly brushed. Sewill says: "Ill made dental tissues are often hereditary, and structural characteristics may often follow those of one parent only." I admit that we very often find the children of people with defective teeth, themselves possessing defective teeth, but how often, on the other hand, do we hear our patients tell us that their parents hadn't lost a single tooth, when deploring their own sad plight, and do we not frequently find members of the same family presenting very different conditions as to their dental armaments? That the general type of tooth is hereditary is almost undeniable, but I do not think it is at all undeniable that the predisposition to caries is hereditary. There are so many influences which might account for caries appearing in the mouths of the children of people who themselves possess carious teeth. The mother may conduct her manner of living in precisely the same way as her mother did, practicing the same errors of diet as she practiced during the periods of gestation, lactation and the subsequent feeding of the child, so I think there can be no doubt that the influence of environment would easily outweigh the influence of heredity in such a case.

I seem to be touching and leaving a number of points, but there is one more I wish to bring forward and that is that the foods we use are deleterious. This is, I believe, the real cause, but I do not think it is the hardness or softness of the foods so much as their quality and composition. Professor Broca says that mere wear of itself is insufficient to prevent the ravages of decay, for the Basque crania in the Paris Museums are alike remarkable for the extent of the wearing down and also for the frequent occurrence of caries. I cannot lay my hands on my authority, and so the statement is not worth much, but I am quite convinced I have seen it stated that many native tribes of the West Coast of Africa live on a gruelly food which requires no mastication and yet they possess perfect teeth. I have an acquaintance who lived for some time with the Kaffirs and he tells me that they live almost exclusively on a mealy food which requires no more mastication than ordinary porridge, and yet they possess sound teeth. We also know that there are plenty of sound dentitions in the midst of unsound ones, where the

owners of each kind of dentition have been brought up on the same soft food. Soft foods are undoubtedly an exciting cause of dental caries when there are teeth present which, on account of their faulty calcification, are predisposed to caries.

Where I believe the composition of the food to be the predisposing cause of caries is at the time when the tooth is being calcified. Is it not common to find the temporary teeth much stronger or much weaker than the permanent teeth and do we not frequently find the wisdom teeth to be the strongest or the poorest teeth in the mouth? And, again, is not arrested decay generally found in children who have had either a big change in their bodily health or a change in their diet?

That our methods of cooking foods are not altogether responsible for our dental deterioration may be to some extent proved by the fact that in the Peabody Museum of American Archæology there are some thousands of crania that belonged to a people who inhabited North and South America hundreds of years ago, and which reveal the fact that there then existed to some extent most of the troubles arising from imperfection of structure, irregularity, and decay of the teeth. There is no doubt that the conditions of climate, habit and general methods of living all enter into the problem.

It is beyond my subject to discuss the process of calcification, but I should like to remind you of one or two points in the process, and in doing so will quote from a paper read by Dr. R. R. Andrews of Cambridge, Massachusetts. After describing the specializing of the dental organs, he says: "At the beginning of the fifth month of intrauterine life a marked change has taken place in the cells. As builders of a calcified structure they differ from the surrounding cells; by a peculiar metamorphosis, they have become specialized. They now become a physiological apparatus, a sort of chemical laboratory. In this condition they are unlike other cells, being unable to lead an independent existence," also "the power of the cytoplasm of these cells, with its formative activity, creates, with the lime from the blood, minute bodies called calcospherites. Thus it will be seen that the special function of these cells is to absorb the calcific material from the blood." Later on he says: "In the formation during disease of a layer of calcoglobulin, there is a deficiency in the supply of the calcospherites. They are given in

the protoplasmic exudate sparingly. In it the globular bodies are unevenly fused. Under the microscope we see masses of globules which have calcified as islands, not perfectly filling the substance in which they rest. In fact the alteration of the developmental force is most marked. These imperfectly formed layers may continue to be formed during the period of disease," and he goes on to say, "A weakened vitality would probably cause the structure to be weakened and defective, to a greater or less degree. Malnutrition would show its effect here as well as in the lessened supply of lime from the blood."

Assuming his description to be correct, what possibilities have the enamel organs of obtaining a sufficiency of lime salts? In my particular province I notice a great number of very poor temporary dentitions. As far as the calcifying material for these is concerned, the mother is almost entirely responsible, and when one looks at the mother in many cases, it is not at all wonderful that the teeth are not properly formed. I would like to have said something on the subject of the food of these poor mothers, many of whom have to work at the mill until the very eve of confinement, to show that, living as they do on white bread, tea and pickles, the poor infant has very little chance of receiving an abundance of calcium salts. Mr. Cocker in his address said: "Other evidence in the report goes to show that nature intends all to have a fair start, and whatever the conditions of the mother might be antecedently, children were mostly born physically healthy." This may be so of many of the organs of the body, but there can be no doubt that as regards the teeth, there are a great number of children who are born with very defective temporary teeth, particularly the incisors, and I think the condition of the mother antecedently must have been the cause of their poor condition. It is, unfortunately, by no means rare to find the temporary incisors of a child of ten months sadly in need of removal. These teeth commence calcification at the 20th week of intrauterine life and such salts as are required for their efficient calcification must come from the mother. If she is not taking these salts in her food (and they are not contained in white bread, tea and pickles), she cannot pass them on to the embryo.

Mr. Cocker quotes Dr. Hall as stating that 90 per cent. of our women have ceased from suckling, and have lost the art of supplying good bone-forming food, after the children are weaned, and also

that after an examination of 2,000 Jewish children, living for the most part in overcrowded dwellings in the slums, he found them taller, heavier and less rickety, and with better teeth than the *better-class* Gentile. Please note the qualification, *better-class* Gentile. This he attributes to the fact that the Jewish wife is well fed during pregnancy, and that 90 per cent. suckle their children. I do not feel justified in refuting the statement that 90 per cent. of our women, on the whole, do not suckle their children, but I am sure the percentage is very far from correct among the class of women living under the same conditions as the Jewesses mentioned. From my own experience at a children's hospital I should say that by far the greater number do suckle their children. Only a week or two ago a woman was complaining at the hospital that owing to a deformity of the lip, her child had been unable to feed at the breast, and in thus complaining said that her financial condition made it difficult for her to afford to pay for the milk necessary as a substitute for her own. These women find it too expensive not to suckle their children. Dr. Handfield Jones, of the British Lying-in Hospital, says on this point: "Inquiry at the various lying-in hospitals reveals the fact that the percentage of women in these institutions who do not suckle their children is very small, probably not more than 10 per cent." This is why I noted Mr. Cocker's adjective, because he, or Dr. Hall, compares the teeth of the poor Jewish children with those of the better class Gentile children; I admit that even comparing the same classes, the Jews show a marked superiority, but it is not so great as in the other comparison. Among the better classes then, he says, the case is very different, and it would seem that breast-feeding is becoming more and more rare.

Here is a point which seems worthy of much consideration. All our statistics show that examinations in poor law and industrial schools reveal a much better condition of the teeth than do examinations in the better class schools. On examination of two schools in Edinburgh it was found that the ratio of defective permanent teeth per thousand of school children of well-to-do working classes was 158.2, while in the children of professional men and merchants the ratio was 273.0 per 1,000. Mr. Dolamore says, "The better the class of school, the worse the teeth."

Putting the two facts together, (1) That 90 per cent. of the poorer

class and of the Jews, who present the better teeth, suckle their children and (2) That only a very small proportion of the better class, who present the poorer teeth, suckle their children, does it not seem possible that here is one clue to our dental deterioration? I had a striking illustration in favor of such a view the other day. A woman brought a child to see me at the hospital to have a temporary molar removed. After the extraction she said she was unable to think why this child should have poor teeth, because all her other children had beautiful teeth. An examination of the child's mouth showed sound temporary laterals, the centrals having gone in preparation for the eruption of the permanent teeth. The temporary molars were poorly formed as was also the crown of the six-year molar and the tips of the permanent central incisors. Analyzing these appearances we find that such parts as were undergoing calcification during the first few months of separate life were defective, while those calcified before birth were sound. When the mother mentioned her wonder that one of several children should have bad teeth, recognizing the condition, I asked if they were all brought up in the same manner. The answer was that all had been breast fed but this one, and for some reason which the mother did not know the medical man had told her to bring this one up on artificial foods and cow's milk. I know there are many influences which might have accounted for the condition, but it is a striking coincidence, and I think we might be justified in concluding that the child was not properly fed during the period of this poor calcification. A case cited by Dr. Ballantyne, of Edinburgh, to show that the fœtus is influenced by treatment of the mother, is of double interest to us as dentists. A woman, with an hereditary history of hœmophilia, gave birth to two male infants in successive pregnancies, the hœmophilia being transmitted in each case. In her third pregnancy she was given chlorid of calcium during the last five months, and she was delivered at full term of a healthy male infant showing no traces of hœmophilia. The influence of the mother during gestation and lactation is undoubtedly very great and I think we would all agree with Dr. Thayer, of Brooklyn, when he offers the following suggestions as to the appropriate food for the expectant mother: "Early in gestation she should begin to eat, at least three times a day, some form of coarse cereal food, such as oatmeal, rye, or Indian breads. These articles, being made from the 'unbolted'

products of the grains, contain a much larger proportion of lime salts than the fine bolted flour of ordinary employment. The result is that the mother supplies her offspring, first through the umbilical cord and afterwards through the mammary glands, with a pabulum containing the essential elements for the nutrition of a very important set of organs, namely, the teeth." Many others might be quoted who firmly believe that proper feeding of the mother would have a beneficial effect on the formation of the teeth of the child.

I have endeavored to show that the calcification of the temporary teeth might be very much influenced by judicious feeding of the mother. There are, of course, the permanent teeth to be considered, most of which are being calcified while the temporary teeth are being used, but that subject would make the present paper much too long. I would say, however, that if the temporary teeth were all well-developed, strong teeth, the child would grow up in the habit of using his teeth fearlessly for mastication. This, I think, would directly affect the blood supply to, and the development of the formative organs of, the permanent teeth. Of course it would be necessary to provide the proper diet for the child after weaning as for the mother before.

Another cause which one has seen assigned is that the brain has been developed at the expense of the teeth. It is quite a possible hypothesis when one considers the point. There are found in the brain and nerve tissues compounds of fluorine, and it is curious to realize that one of the salts found in enamel is calcium fluoride. This salt is peculiarly resistant to the action of acids, much more so than is calcium phosphate, which is also present in enamel. If the brain in its development monopolizes the fluorine at the expense of the enamel, thus taking away its most indestructible salt, may we not justly say that the brain has developed at the expense of the teeth? It would be interesting to know if there is a less percentage of calcium fluoride in the enamel of soft teeth than in the enamel of hard teeth.

Many people consider the drinking water of a town as one cause of dental decay. Mr. Naden of Birmingham, has gathered some information on this point. He mentioned in a paper he read some time ago, that dental decay and rickets have largely increased in Glasgow since that town used the water from Loch Katrine. Also

that in Birmingham, where the water is very hard, the number of recruits rejected on account of bad teeth is comparatively very much smaller than that in Glasgow and other towns with a soft water. Soft water is soft by reason of its lack of calcium carbonate and bicarbonate and magnesium carbonate and bicarbonate, which salts are found in enamel. As water forms a considerable portion of one's diet, it is quite possible that the loss of these salts from the water would have an effect on the calcification of the teeth.

I am afraid I have occupied rather a long time on the subject, but I found it so large that it seemed impossible to treat it in a less space. I will, in conclusion, mention one singular point which might bear on the subject of the better teeth of the laboring classes than of the professional classes. I might say that I have often been struck, as no doubt you also have been, by the prevalence of much larger jaws in the laboring classes.

Darwin, in his "Variations of Animals," records the measurements of a great number of pigeons to show that there is a correlation of development between the feet and the beaks; the effect of disuse of the feet is to cause their decrease in size; and the size of the beak, although being used, diminishes correspondingly. In his "Descent of Man," he says: "From the correlation which at least exists in some cases between the development of the extremities and of the jaws, it is possible that in those classes who do not labor with their hands and feet, the jaws would be reduced in size from this cause. That they are generally smaller in refined and civilized races than in hard working men and savages is certain." It is asserted that the hands of English laborer's children are at birth larger than those of the children of the gentry. Have we in this correlation another important factor in dental deterioration?

The views I have put forward in this paper are open to discussion and many of the statements may be refuted. I should, had I had a longer paper in preparation, have qualified much of the matter, but as the paper was to be a short one I have written it as I have, knowing full well that it lends itself to much adverse criticism.

Should this adverse criticism be forthcoming, the object I had in view at the commencement, namely, that a discussion of the several points should be aroused, will have been attained.—*Dental Record.*

THE IMPORTANCE OF EARLY RECOGNITION OF EPITHELIOMA. By J. E. Powers, D.D.S., Providence, R. I. Read before the Massachusetts Dental Society. In this paper it is my object to give the dentist a brief outline of the pathognomonic signs of cancer affecting the oral cavity and its adjacent structures. I shall discuss briefly the early recognition of these conditions, at a time when the malignant tissues may be surgically removed without danger to the life of the individual. As the dentist is the person who sees these affections first, and in all instances long before the patient has any idea that any abnormal conditions are present or developing, we cannot help feeling that the responsibility of arriving at a timely diagnosis falls upon the members of our profession. Because of the numbers of cases which I have had the good fortune to observe, wherein the time consumed in arriving at a diagnosis was so prolonged and the development of the growth was so considerable that it was beyond the limits where science could be applied in the treatment of the condition, it does seem that with the services of so many skilled pathologists, who are always at our command and whose qualifications in their specialty of medicine and surgery enable them to decide definitely the condition of any growth, that if we do not employ the precepts of this branch of science in the treatment of our patients we are guilty of an error which in many instances is criminal, because such errors may mean death to the individual who may come under our care. In consideration of these statements, which are based on fact, we are bound as individuals and as a profession not to treat too lightly any suspicious indications which may be present in the mouths of our patients, but should regard them seriously and in detail and with the same concern that would characterize our actions if a similar condition were present in our own mouths.

As dentists we should be familiar with the treacherous and apparently innocent development of this form of pathological growth, and voluntarily call the attention of the individual to this condition rather than wait until our advice is solicited and our attention is directed to such conditions by the patient himself, because in many cases the patient's lack of knowledge of his true condition will not lead him to seek any information regarding what he believes to be a simple sore, but what in reality may be a cancer. We know that in the beginning cancer is always a local process which appears

as an innocent phlegmon, which gradually but steadily spreads, and if we fail to recognize it in its first stages the surgeon, whether oral or general, will almost invariably see the case only when the disease is too far advanced to permit of a complete removal. In dealing with this subject I will not take your time with the microscopical account of the tissues when affected by this form of disease, but will confine myself to its macroscopical appearance, and describe the parts which interest us as dentists and specialists of medicine.

The principal signs that may be considered in the examination of a mouth ulcer are, first, its situation; whether it is simple or multiple; its size, whether it is disseminated or circumscribed; the character of its edges, whether it has a sharp, sinuous, dentated, or undermined border; whether it is indurated or soft; whether it is gray or highly congested, and whether epithelium pearls are present or not. These signs, together with the history and the results of pathological examination, will usually determine the diagnosis.

Epithelioma generally appears after the age of fifty years, rarely before the age of thirty. Epithelioma of the lip generally appears as a simple hyperemia and gradually develops into a hard globular swelling which has the appearance of an undeveloped wart, with a hard base which is inflamed and involves the adjacent tissues within an area of from one-quarter of an inch to one and one-half inches. In the later stages it may appear as a crack in the lip which has been scabbed over, or as a sore discharging a sticky fluid. The inflammatory condition not only involves the mucous and cutaneous surfaces, but extends into the structures of the lip. It is usually found on either side of the mouth, on the surface where the pipe rests, although it may occur on any part of the lip. Pipe-smoking seems to be one of the accepted etiological factors in producing these conditions. Although it does occur in non-smokers, and occasionally in women, I have never seen cancer of the lip affecting women, and in support of the theory of pipe-smoking being a cause some writers mention the fact that in one instance a woman affected with epithelioma was an habitual smoker of the pipe. Such conclusions cause us to know that it is generally the result of and induced by persistent irritation. The places where it manifests itself, together with other conditions which give rise to it, cause us also to know that by their presence they supply constant mechanical and chemical irritation.

If the growth can be excised before the submaxillary lymphatics become involved there is a good chance that it will not recur more than in other forms of cancer. The knife is the safest and best method for the treatment of this form of disease, and a rule that we should follow is to regard any sores upon the lips of adults who are over forty-five years old as malignant until proved that they are benign. Appropriate treatment should be advised.

The operation if resorted to in time is comparatively simple, and consists of the removal of a V-shaped section which will include the growth; healing is by first intention and generally is complete within a week. Of course, when the disease is so far progressed as to involve other organs, such as the glands, jaws, etc., the operation must be extensive enough to include all the affected tissues, osseous or muscular.

Now, the other pathological condition which presents itself is the syphilitic sore, or chancre, and we should all be able to differentiate between the two conditions. Chancre appears more on the lips of women than of men. In many instances a complete physical examination, together with a detailed history will cause us to be able to recognize chancre, but I have known of cases where such steps would fail to give any positive or reliable information; hence it is necessary to know the physical characteristics of each form of these pathological conditions. First, the lymphatic involvement generally precedes the appearance of the sore in syphilis, and it always follows the formation of the primary sore in cancer. Cancer always presents a hard base and the ulcer never heals completely. Chancre seldom if ever has a hard base and will disappear within a few weeks under anti-syphilitic treatment.

Epithelioma of the tongue usually appears on the side of the tongue, although no part is exempt. The anterior portion is more frequently affected than the posterior. It occurs in men more frequently than in women, and between the ages of forty-five and fifty-five years. Barker says it occurs in 46 women to 241 men. Personally I have never seen epithelioma of the tongue affecting women, but have seen several cases in men. Chemical or mechanical irritation may produce this condition, such as sharp corners of teeth, the accumulation of calculus, ill-fitting plates, caustics and smoking.

Epithelioma of the tongue is very rapid in its process of destruction; it will appear after the age of forty, and generally within

three or six months will have reached a size where operation is contraindicated. It may appear as a hardened mass, with little inflammation, on the free border of the tongue. It is generally found near a broken tooth, and develops into unhealthy suppurating tissue. At other times it may appear as a slowly extending ulcer.

Psoriasis of the tongue generally follows pipe-smoking and syphilis, and in 80 cases treated by Butler for cancer 16 followed this condition, which proves its predisposition to cancer. Any condition that will produce irritation may be the exciting cause, but it may occur without any preexisting disease or irritation.

Many cases of epithelioma of the tongue follow leucoplakia, so it is important that this condition be corrected when it first appears. In the last stages of epithelioma of the tongue this organ loses its power of motion, becomes very painful and the glands become affected. When this condition is reached, epithelioma is easily diagnosticated, but it is then too late, as in all such cases there is no chance of recovery, and surgical treatment is contraindicated. Therefore we should familiarize ourselves with its early signs, as there are other ulcers which resemble malignancy but are really benign. I feel that a comparative description of such ulcers with their resemblances and differences is perhaps a part of this paper.

Syphilitic ulcer is a condition which is frequently met with and which can be recognized first by the fact that ulceration follows the induration or hardness. In cancer it is just the reverse, the hardness of the tissues follows the ulceration. In cancer we have but one ulcer, in syphilis we may one or more. Cancer is almost always on the side of the tongue; syphilitic ulcer is on the dorsus of the organ. In the ulcer of syphilis the glands are rarely enlarged; in cancer they are most always enlarged—that is in cases of long standing. Cancer has a very hard edge; syphilitic ulcer has a softer, but very sharp border.

Tubercular ulceration is another condition which we may meet, and in this condition we must rely largely on a correct family and individual history and upon finding the presence of tubercle bacilli. The glands are affected in this condition as they are in cancer, so this condition can be taken only as a corroborative symptom. Tubercular ulcerations are always small. Larger ulcerations therefore would not be tubercular. Tubercular ulceration has a sinuous, irregular, undermined border.

Now we arrive at the *simple ulcer* (which is perhaps the one most commonly met with during our practice) and its recognition while it is a local affection. When such conditions manifest themselves we should look for the irritating object, such as sharp or broken teeth, accumulation of calculus, sharp edge of a plate, etc.

The bases of simple ulcers are seldom indurated, while cancerous ulcerations always have indurated bases. In simple ulcers the degree of infiltration is not noticeable to any extent; in cancer the infiltration of the tissues is very marked. I have within the past few years known of cases of syphilitic ulcer being mistaken for cancer and operation advised; the patient refused, however, and under the care of another practitioner the ulcer disappeared under anti-syphilitic treatment. There is really no excuse for such errors.

Carcinoma or *epithelioma* of the jaws generally appears as an indolent, slowly extending sore, with hardened base and margin and no evidence of surrounding inflammation being detectable. The growth is of a warty nature. The tissues covering this growth become broken and we have a highly inflamed cauliflower surface, secreting a sticky, viscid fluid. The surface is very painful, as well as the adjacent tissues. Its growth is very rapid, as may be concluded from the following case in which I happened to be one of the consultants. A man sixty-five years of age suffered from a carcinoma of the upper jaw, the side of the tongue, the tonsil, and the cheek. The patient wore an upper denture, and about five months previous to the time of consultation be noticed a small sore at the junction of the hard and soft palates. He gave it home treatment and during the five or six months the growth included the area just described. In this case, strange as it may seem, the glands were not affected to any extent, especially as one would expect to find in a case with the malignancy involving so much tissue. Of course, in this instance operative treatment was not recommended and within a short time death will relieve his sufferings. I have seen more of this form of epithelioma in the lower than in the upper jaw and have never seen a case of epithelioma of the jaw in women. In the case of the lower jaw, cancer generally affects the body of the bone, and is usually associated with the simultaneous affection of other parts.

When operation is not resorted to, death generally relieves the sufferings of the individual within a year or eighteen months, and

in a few cases they may live two years. Death is generally due to exhaustion, starvation and hemorrhage, due to the arteries being in the path of the destructive process.

Although the constitutional symptoms of the disease do not always present themselves in connection with affections of the parts we treat, it is well to know them as a corroborative measure. They are generally preceded by local symptoms when other parts are involved, and consist of a peculiar sallow cachetic look with a yellowish earthy tint of countenance, a careworn, gloomy expression, and anemia with its accompaniments, the degree of these symptoms being in proportion to the stage of the growth as well as the locality. Now, in consideration of the facts that benign and malignant growths resemble each other and that malignancy is produced by chemical and mechanical irritation, we should remove the cause or see that such conditions are prevented from existing.

The practice which I dare say is common among the members both of the dental and medical professions, of applying silver nitrate and other caustics to all sores in the mouths of elderly patients, should be discouraged, for while it will do no good in the treatment of a simple ulcer, it may cause such ulcers to become malignant by the constant irritation produced, and if it is already malignant it does much harm by delaying the date of operation and preventing the patient from knowing his true condition. In all cases the services of a pathologist should be secured to decide positively. Whether or not the surgical treatment of cancer of the mouth and face belongs to the general surgeon or the oral surgeon I will not discuss, but I agree that its early and correct diagnosis belongs to all branches of medicine, and especially to us who spend our lives in the care and treatment of this one specialty of medicine.—*Dental Cosmos.*

ON THE PATHOLOGY OF THE PULP. By Dr. G. Preiswerk, Basel, Switzerland. Read before the Union Meeting and translated from the Schweizerische Vierteljahrsschrift für Zahnheilkunde. It is known that the different forms of pulpitis have been variously divided. Valuable though these divisions may be, they cannot always be brought into accord with the pathohistological findings. The chief forms, as distinguished by Arkövy, will remain for all time; but it has been seen that in regard to the

sub-forms the clinical symptoms do not always tally with the patho-histological findings. I have endeavored, therefore, to come to closer quarters with the pathology of the pulp. Everything is still developing.

Fresh preparations were cut and stained possessing the same clinical symptoms; I then examined what pathological alterations these clinical symptoms matured. My investigations have not prospered to a great extent. But already it has been shown that a whole series of diverse diseases of the pulp produce like symptoms, and that a whole series of diverse symptoms have for their basis a like pathological picture. The pathology of the pulp is very simple and at the same time very difficult—simple on account of the clearness of the alterations which have taken place and difficult because we do not yet know the conditions with exactness.

The pulp consists of a tissue which is not analogous to any other permanent tissue of the human body. It is a tissue something like that of the umbilical cord. Large roundish granules alternate with large longish granules; these are the main elements. Then we have, further, spindle-shaped granules, which, however, only accompany the bloodvessels and nerves. It appears that the cells are from roundish to polygonal, and that they possess processes; these are very difficult to color. It has been debated if the fibrils are true connective tissue. Probably we have not true connective tissue before us, for, according to Van Gieson's method, it does not stain red like connective tissue. Pathologically also the tissue is very peculiar. It is not a vascularized and innervated part of tissue which, like the skin, is united with the surroundings by means of sap spaces, but a tissue which is laced up at one point in such a way that the bloodvessels and nerves have their ingress and exit only through a very fine pin-like opening.

Disturbances and diseases, therefore, which befall the pulp are of a much more destructive influence upon the entire organ than is the case with the remaining parts of the body where many anastomoses exist. When the pulp becomes affected with disease at any point, the tissue reacts in all its parts, simply because the ways of ingress and egress are too limited. When irritation arises, an alteration in the circulation occurs as a matter of course. This is quickly followed by stoppage, with stasis in the vessels, and this stasis leads to the death of the tissue—to necrosis.

There is another reason why the symptoms are so severe if the pulp is attacked. This is the lack of tissue spaces—lymph-clefts: Dr. Bödecker has seen lymph-clefts; no one else has, however. I do not believe in lymph-clefts, for this reason—that in hundreds of pulps which I have examined I have not observed a single cleft. It can easily be seen that with this lack of lymph-clefts disturbances of circulation, once they have arisen, cannot right themselves again. Let us assume that pulpitis occurs at some point of the pulp, and we shall first find the appearance of cell infiltration; therefore round cells will occur which attack the neighboring tissue. Hand in hand with this cellular infiltration there then chiefly occur vascular enlargements, on account of the stoppage. The vessels become greatly swollen in their closest proximity, so that stoppage occurs (all those who have studied pathological anatomy will know the appearance of stasis also from other organs); and not only are the bloodvessels already tumefied in the first stage close to the center of the disease, but also at very distant points. The distention will explain the severe pains. The pulp is inclosed by solid bone walls; the distending vessels narrow the lumen, which in itself is already of small measure, so that the nerve-fibers lying between are pinched and drawn.

In chronic cases we only truly see the influence of the defective ways of egress. Everything arises which pathological anatomy understands by "regressive disturbances in nutrition," namely, necrosis, gangrene, hyalin degeneration, fatty degeneration and calcification, finally, cheesy degeneration (*Verkäsung*) and hydropic degeneration. That dead parts do not become regenerated you all know. At the most, there may be formed a demarcation in the direction of the healthy tissue, which occurs rarely in the pulp on account of the defective ways of ingress and egress. Cases are known, however—I have heard of three—where it looks as if sometimes the pulp were capable of healing. In practice I have also met with such a case; it was a case of so-called "healed caries." In the depths of the cavity there existed a small hole, and when a probe was inserted the patient showed sensitiveness; the tooth had been affected with pulpitis, and the pain was as if someone touched his gum. As there was no reaction in the tooth in question for over two years after the occurrence of the pulpitis, we are perhaps justified in assuming the healing of the pulpitis.

In order to come back to the grave alterations of the tissue produced by chronic inflammations of the pulp, I must, in addition to necrosis, mention gangrene—the malodorous moist mortification. The difference is not great in reality. It lies chiefly in the moisture and in the action of the bacteria. In gangrene there are added certain excitants of decay, which dissolve the pulp into a sticky, gray, soft pap, accompanied by the development of evil-smelling gases.

As a further consequence of degeneration, we frequently see in the pulp a peculiar tissue which I have seen nowhere described. Wedl alone illustrates something similar, which he considers a drop of fat. I have, however, stained for fat, and seen that it is not fat, but only has a similar appearance. The tissue dissolves, in consequence of such chronic inflammation, at distant portions and forms vacuoles. This then looks like soap-suds, or also like a sponge. In my collection of histological preparations there is a large number of similar objects; on account of the meshy appearance of the tissues, we have the picture of reticular atrophy. This expression has no further meaning; it only represents the method of the alteration.

We often see cells with flattened cell-granules; only the peripherally displaced granule is visible; the cell contents cannot be stained—a proof that they have disappeared, and that in their place something else has been deposited, whereby the granules have been pressed to the periphery of the cell membrane: this occurs mostly in the same direction. This appearance is open to various explanations.

In many instances it is a case of hydropic degeneration; the cell-bodies, in time, take up liquids in small drops, and these drops by degrees flow together into large collections. The liquid increases in quantity, and the granule, which was in the center, is pushed in the direction of the periphery and flattened. With no reagent and no staining method can anything else be demonstrated than liquid, which cannot be more exactly characterized.

Now there also very frequently occurs, besides hydropic degeneration, a pathologically altered tissue, which perhaps may be fatty degeneration. I am not quite certain in regard to some preparations; but in the case of some others I have demonstrated the presence of fat by the coloration of the preparations with picrine

or sudan, and cutting them with the freezing microtome. Cells were present tightly filled and colored yellow or red, which must be assumed to be fat spheres, that are strewn into the remaining tissue. We can easily see that these luminous spheres contain fat. The fat collects in the same way as the liquid in hydropic degeneration. The cells, as can be seen from my preparations, are enlarged by the fat to spheres of magnitude, on which the granules sit like hats.

Besides fatty degeneration, we meet with a great many calcifications in the pulp. In literature we find quite a number of denticles and dentinoids described.

So far, however, I have never seen any real dentinoids, but always only calcifications, and the calcifications have appeared either in the form of calcified spheres along the vascular sheaths, or in the form of spheres distributed in the entire pulp tissue; or, again, they were found in the midst of necrotic hearths. The necrotic hearths are then so calcified that in their center they contain an irregularly shaped calcified granule with a necrotic court, or with a court of hyalin degenerated tissue.

With hyalin degeneration there are found hyalin concretions in the center of the tissue. These glassy, transparent concretions undergo secondary calcification. They may be roundish or polymorphous. The process of calcification begins in the center, and by degrees proceeds up to the periphery. These hyalin concretions are then disposed concentrically like the layers of an onion—a picture very rarely seen so beautifully in other preparations of the human body.

Calcifications must, however, also come about in another manner, to which I will not refer in detail. Without any recognizable cause multiple calcified spheres occur in the midst of the tissue, and these are the cause, not the consequence, of the destruction of the pulp. They produce the pulpitis concrementalis.—*Ash's Quarterly.*

BRIEF CONSIDERATION OF THE GRADING OF STUDENTS IN DENTAL COLLEGES. By C. N. Johnson, M.A., L.D.S., D.D.S., Chicago, Ill. Read at the meeting of the International Dental Federation, at St. Louis, Mo., August, 1905. In the present splendid international movement connected with the profession of dentistry there is no question of greater importance

for our consideration than that of dental education, and there is no phase of this question more in need of adjustment than that of the proper grading of our students. It is probably too much to hope that we may in our international deliberations bring about a perfect uniformity in methods of grading in all the dental colleges of the world, no matter how desirable such a consummation might be. The difference in temperament and modes of thought, the difference in general educational systems in the various nations represented in this Federation would render such a problem difficult of solution. And yet I venture to believe that with a careful consideration of the question we can come much nearer together than we are, and that we can very greatly improve on most of the systems at present in operation.

There are two general considerations connected with this subject which it might be well for us to study at this time—one, the grading of the student on his entrance to the dental college, and the other the grading during his college course till graduation.

In the matriculation requirements of most of our dental colleges, the standard is not placed sufficiently high, or at least the character of the preparatory work is not of the most desirable nature, but this particular feature of the subject does not come within the province of the present paper. Let it be agreed that it is necessary to establish a certain standard for matriculation which shall be considered a minimum standard for entrance to dental colleges. This seems imperative for the proper regulation of admission to our professional schools, without which provision the temptation would be too great to admit applicants who are in no way qualified to even begin the study of dentistry. The regulations in this regard should be very rigid, and the restriction so placed that no applicant can be admitted unless fully up to the standard.

What shall we say, however, of the individual who in his preparatory work has gone far in advance of the required standard? Shall we continue to place him as we do now, side by side with the man who has by virtue of the benefit of a doubt managed to gain admission on the merest margin? It is manifestly wrong to compel a bright or well-informed student to be handicapped by association with a dull or ignorant one, and the way to avoid this is to subject every applicant to a test on entering college, whether in the way of an examination or by indisputable credentials, and then grade

each student according to his attainments. If a student fails to give evidence of being up to the required standard for entrance let him be rejected till he makes up the deficiency; but if he demonstrates the fact that he is far in advance of the standard and has already perfected himself in certain studies which form a part of the dental college curriculum, then by all means give him credit accordingly and do not compel him to go through the routine of covering ground that he has already gone over. In other words, a man should be given credit for the knowledge he possesses, no matter where or how he has obtained that knowledge. If he has in his preparatory work completed a thorough course in chemistry and can demonstrate that he is familiar with the subject, let him be given credit for it, so that he may spend his time in other work and thus advance in his professional studies more rapidly. The fact of tying him down to a routine course in a certain prescribed period of time—a period regulated by the necessities of a slower and duller class of students—is not in accordance with the broad idea of allowing every man to advance in his chosen calling as rapidly as his attainments permit.

This same principle of grading will also apply after the student has entered the college. The requirements for graduation should be made more a matter of accomplishment than of length of attendance, though, of course, for the protection of the best interests of the profession, the college, and the student himself, there should be arranged such a curriculum that in order to cover it completely the student must of necessity attend a certain period of time which shall be considered the minimum period, and this minimum should not be short. The present paper is not a plea for reduced requirements, nor the lowering of the standard in any particular, but for a better arrangement of the course to the end that there shall be a greater opportunity for individual advancement and a more pronounced recognition of the personal equation among our students.

In the past there has been too much of the grist-mill method about our college course. No one would admit that there was as great a similarity between the individuals of a class of dental students as there is between the different grains of wheat in a sack, and yet our method of making material available for use out of the one has been very similar to that of the other. We toss our students all into the same hopper and appear to assume that by a set process

we can turn out a reasonably uniform product. Experience has shown us that while human nature is wondrously adaptable, yet there has been an element of injustice either to the slow student, who has been hurried along faster than his understanding can carry him, or to the bright student who has been retarded in his work far behind where his abilities would ordinarily have urged him.

If the course were properly arranged this need not be the case, and at this juncture the question quite naturally arises as to how this may be brought about. In the first place more frequent examinations should be held to determine the precise status of a student as he progresses in his work, and the college course should accordingly be divided into semesters of not longer than three months each instead of being divided into years or terms as it is now. In the first one or two semesters the work should consist for the most part of dental technics, with lectures only on the fundamentals of dentistry and the particular technical work in hand. This would at once demonstrate which students were particularly adapted to dentistry and which were not, and it would also give a decidedly dental trend to the early part of their college instructions, besides bringing them into close personal touch with their teachers at the outset.

All of this is important, and the plan will prove much more effective and more acceptable to the student than the present one of plunging a raw recruit at once into the mysteries of chemistry, physiology and anatomy, which from his limited point of view have little or no relation to the practice of dentistry. These studies should be transferred to a more advanced period of the college course, when the students are better fitted for the study of purely scientific subjects, and are in a more enlightened relation to the necessity of such subjects in the rounding out of their knowledge.

The plan of limiting the early months of college instruction mostly to technical subjects, fits perfectly into the semester system, and gives a better opportunity for the proper grading of students. It also starts a student out with more heart in his work because he sees at once some relation between his studies and the future practice of his profession, which is assuredly not the case when he is forced to start his college course with abstruse subjects, and in a mental condition for the most part unfitted to grasp the meaning of what he is being taught.

By this plan a student may be so graded from the very beginning that his advancement is in strict accordance with his application and ability, while if he lacks application he is at once brought face to face with his true status by being set back to his proper place at the outset. Under this arrangement there is no premium on idleness, because a test is made of the student's progress at such frequent intervals that he is naturally kept constantly on the *qui vive* to secure the best rating. He will then not idle away the first half or two-thirds of the college year with the idea of cramming for examination near the close and squeezing through on the smallest possible margin. The only objection to the proposed plan is one which after all should not even be mentioned. This relates to the increased labor which it will entail upon the teacher. It is true that this plan properly carried out will involve our instructors in much additional work, and this in view of the already great tax on the nervous energy of dental professors would at first thought seem a serious consideration. But when the future welfare of the profession is involved, as it is in this instance, there should not on our part be the slightest hesitation in accepting any responsibility however great, or performing any labor however burdensome. Our sole aim should be the betterment of dentistry even in the face of our own personal sacrifice.—*Dental Brief.*

HYGIENE OF THE MOUTH. By R. B. Tuller, D.D.S. It is pretty generally recognized that bacteria are the cause of the breaking down of the highly organized tissues of the mouth, or particularly of the teeth, the direct cause being due to an acidity due to fermentation, or putrefying conditions.

Microorganisms are maintained and are active only in the presence of heat, moisture and food. The mouth, having these essentials in abundance and being the habitat of many varieties of bacteria, is a veritable hot-bed for their culture and the consequent conditions capable of corroding and disintegrating the hard, dense structure of the teeth.

It would be a somewhat natural conclusion that with such a potent agent always present and in contact with the teeth, destruction must follow rapidly. Such is the case in some especially favorable circumstances, but nature has provided at the same time, when conditions are normal, a counteracting influence which renders the

teeth to a large extent immune from this corrosive attack and only yields when its laws have been in some way perverted, through ignorant or willful disregard on the part of individuals or their ancestors.

Primitive man was endowed with good teeth and all the conditions necessary to preserve them through a natural existence, but modified man has a good many inherited weaknesses to contend with, as well as results of his own personal indiscretions. As a consequence the present generation, and many before us, have not been endowed, in many instances, with perfect teeth to begin with, being prenatally deficient in many ways, and our maintained habits of living are not conducive to their long preservation.

Rarely, in this day and age of the world, do we find among civilized nations any who can consistently ignore the services of a dentist.

Hygiene is defined as the art of preserving health. Hygiene of the mouth, then, is the art of preserving health in that orifice, and especially of the teeth, since these organs, the hardest in the entire human economy and the most highly organized, are more prone to impairment all through their stay than any other part, and with no provision in nature for the repair of lesions as have other tissues of the body, if not too seriously injured.

The only soft tissues in the mouth that become diseased and degenerate with a trouble common to many after maturity, are the gums and other tissues immediately surrounding the teeth, the latter not being involved except as a sequence—that is, becoming loosened and dropping out, or requiring extraction, although sound in themselves.

This, of course, has reference to so-called pyorrhea alveolaris. The name does not correctly designate the disease, nor do several others which have been applied, but the disease, whatever it is and whatever the cause, results in the loss of more teeth, all told, than does caries, which, as has been shown, attacks the tooth itself.

It has been noted by many observing dentists that where immunity to carious attacks has prevailed until middle life, there frequently seems to be a greater tendency than usual toward pyorrhea, and one often hears of people who never had occasion to visit the dentist owing to every tooth being "sound as a dollar," but strangely, to them, they became loose and just dropped out. Yet, not infre-

quently, in some such mouths a few teeth will remain entirely unaffected either by caries or disease of the tissues surrounding.

Now, all the foregoing goes to show that while elements of danger generally exist, or are ready to possess the field at the least opportunity, nature endeavors to adjust matters equitably or in favor of health, but she must in many instances have our assistance.

Hygiene of the mouth must, in large part, be attended to by each one for himself, and earnest cooperation given when the advice and skill of the dentist is sought. The services of our profession are rarely sought in a preventive way, but for curative and reparative measures are seriously in demand. The first efforts of the dentist when called upon in time, are prophylactic; and, of course, this procedure goes all through subsequent service, as concerns tissues not yet affected by disease, or at least should do so. He should not only try to prevent caries, but, with watchful care and the cooperation of the patient, prevent any foothold of pyorrhea.

While degeneracy of the tissues of the mouth, it is true, provides a field for the dentist, or, in other words, makes business for him, there is not one with any pretense of honesty and ethics at all who will not give the best counsel and advice at his command as to what people may do for themselves toward preserving their teeth. Every dentist advocates proper personal care of the teeth by use of the tooth brush. He likes to look into a well kept mouth, but he knows that all deleterious substances cannot be removed by the patient, however painstaking and diligent he or she may be. He knows, too, that his own efforts, with all his knowledge and skill, and with all the facilities at his command, must be extremely painstaking if he removes everything that should be to preserve healthy conditions. Every recess in a tooth must be penetrated, and every surface of each tooth must be gone over with proper instruments, and every particle of deposit sought out and dislodged from under the free edges of the gums, for just here lurk the incipient conditions that lead in time to pyorrhea. Cleaning teeth for show and cleaning teeth conscientiously for the preservation of their health are two different things. The patrons of our profession, however, do not always appreciate the difference, especially when time must be consumed to do honest work and a fee charged accordingly. Some dentists—too many—have a fixed fee, and a small one at that, for cleaning teeth, with the result that only the effort is expended that

in their estimation fits the fee, and that is mostly mere cleaning for show. One cannot prevent pyorrhea in that way.

Operators having the confidence of their patients that they will do what is right and best for them, take all the time necessary, one hour or ten (in different sittings), to do thorough work. If cleaning and polishing teeth is an essential part of hygiene, and it unquestionably is, every surface of every tooth must be painstakingly gone over and hidden deposits hunted out by skillful touch and manipulation. Polishing is essential, first, because scaling does not always remove all the minute particles and any such portion left is a ready nucleus for new deposit, and, secondly, because a polished surface makes new deposit difficult, hence remains longer in good order. Polishing under the free edge of the gums may be done in some instances by hand with a flattened piece of orange wood and pumice, following with fine chalk. Polishing cups of rubber and others of bristles are provided for the dental engine and may, by a little effort and dextrous manipulation, be carried under the free edge of the gums without any serious injury to the same. There are deep-seated pockets in advanced stages of pyorrhea that cannot be polished other than may be done with varied small points held in the hands like scalers.

Of course, medication follows instrumentation and polishing, the first being some H_2O_2 (peroxid of hydrogen), 3 per cent. preparation, to wash away debris.

This preparation might not always be judiciously used if injected into deep pockets with a constricted opening for escape. Peroxid of hydrogen in contact with pus and putrescence is almost explosive in the rapid formation of gases, and even in contact with serum, and the result in deep, close pockets is often painful and there is a risk of disease germs being forced farther into the tissues by the pressure. Peroxid of hydrogen is very excellent to use with polishing powders. Persistent stains will usually yield readily with this mixture.

The other medicaments to use depend somewhat upon conditions. In many instances, in the early stages of pyorrhea, or conditions that would in time lead up to it, the application of peroxid of hydrogen is sufficient. In other stages an astringent antiseptic and stimulating remedy should be used. And, again, when pyorrhea has affected the alveolus, a remedy is required to eat away or

separate the dead particles of bone from the living and stimulate the parts to renewed healthy action. A combination of carbolic acid and sulphuric acid, equal quantities of each, worked into the pockets on a splinter of wood, brings good results, being repeated for three or four sittings if need be.

One of the most wholesome things that may be done after brushing, and to be done mostly, if not entirely, by the patient, and done daily, or should be, is massage of the gums. This may be done with the fingers pressing hard above the teeth and squeezing and working down to the edge of the gums. A little time spent each day with gum massage will result in those tissues becoming harder and more capable of resisting the incipient deposits, in fact, dislodging some that have obtained a foothold.

Toothpowders or pastes are good adjuncts to the brush, more because they assist in removing the filmy foods and mucus, better than a plain brush and water.

Waxed floss silk, or dental silk, will go between the teeth where the brush cannot reach, and, used daily, is beneficial.

There are large numbers of antiseptic washes on the market, but none of them can be depended upon to keep the mouth free of germs, or to reduce the harmful conditions very materially. With most of them the mouth feels refreshed and cleaner after using a wash or antiseptic and it does no harm even if it does no good. But it does do some good for a short time, and most of them are good to be used daily.—*American Dent. Jnl.*

PRESSURE ANESTHESIA FOR EXTIRPATION OF THE PULP. By Wilfred E. Griffin, L.D.S.Eng. The saving of pulps by capping them, especially of inflamed pulps, is a procedure which is never free from risk of failure, and although the percentage of failures in some hands may be small, yet the pain attending such failures is so great, and the work required to correct them so discomforting, that we may well hesitate before deciding to endeavor to keep the pulp alive by capping.

It is only within the last two years that pressure anesthesia has been acknowledged the best method for extirpating the pulp.

As recently as 1902 Messrs. Gabell and Austen wrote in their "Materia Medica for Dentists" that cocain is all but useless for obtaining anesthesia of a tooth pulp in which there is any vitality, if

merely applied to it as a solution or crystals. To-day, many men claim that by the use of cocain they are able to completely anesthetize the tooth pulp in three minutes.

I will not attempt to describe the varied methods and appliances that are used by different operators for applying cocain, but give details of the method I employ myself, and which appears to me to be perfectly satisfactory.

I have found Parke Davis' Hypodermic Tablets, No. 81, the most successful for this work. They are composed of hydrochlorate of cocain ½ gr., sulphate of morphin ⅛ gr., and sulphate of atropin 1-200 gr. They are put up in convenient form and are easily crushed. A third or one-half of one of these tablets, according to the size one expects to find the pulp, is taken, crushed with a spatula, and carried to the cavity on a small pellet of spunk which has been previously dipped in adrenalin. It has been stated that cocain penetrates the pulp more easily in this way than when it is first *dissolved* in adrenalin. Adrenalin is a most valuable solvent, as it helps to prevent hemorrhage after the pulp is extracted. The pellet charged with cocain is placed immediately on the exposed pulp and allowed to remain there a few seconds. Then a piece of red unvulcanized rubber (not large enough to fill the cavity) is placed over this, and pressed down slowly and gently, so as to cause no pain.

If there should be any sign of pain the pressure is not increased, nor is it released, as this delays anesthesia, and the pain will die away at once, and quite disappear in about five seconds; besides which the act of releasing pressure will cause pain in itself. Steady, continuous pressure, increasing immediately pain has passed, but never decreasing, is what is required. We must, of course, be quite sure that the cocain is exactly over the exposure, and take great care not to displace the pellet in introducing the rubber. In interstitial cavities it is best to work the rubber down to the edge of the cavity first, and afterward work it over the cocain. In manipulating the rubber, instruments with ball or pear shaped ends should be avoided, as they sink into it, become inclosed by it, and when removed in order to give further pressure, or pressure in a different direction, they tend to drag the rubber from the cavity and produce slight suction on the pulp, causing considerably more pain than any pressure. I prefer to use flat instruments which can be removed

edgeways without disturbing the rubber, or thick curved pluggers, whose ends gradually taper from handle continuously to end. After one or two minutes the pressure may be greatly increased, to insure the entire length of the pulp being anesthetized, and when this ceases to give any pain at all the rubber and spunk are removed. Some of the spunk and rubber will be found forced into the pulp chamber, and sometimes a considerable way down the root canals. The pulp chamber can now be opened with a bur, and in almost every case the pulp can at once be removed. In some few cases it becomes necessary to go through the same procedure again, but this requires less time than before (generally less than a minute), after which the whole of the root can be thoroughly cleaned.

The easiest and shortest cases are of course those in which the pulp is already exposed, either by caries or trauma, but when this is not so, the difficulty is only increased just as it is for the application of arsenic. The dentin should be thoroughly desiccated and treated repeatedly with hot carbolic acid, which is dried off again with the hot air syringe. The finest drill, frequently sharpened, is then used in the direction of the dentinal tubuli, at the point nearest to the pulp. The drill should be followed at intervals by a small new round bur. The smallest exposure is sufficient, in fact, some of the most successful cases are those with the most minute exposures. If the pulp cannot be exposed in this way, the method advocated by Dr. Clyde Davis should be followed. This consists in applying to the dry dentin a drop of adrenalin, then a few crystals of cocain, followed by one drop of a 40 per cent solution of formaldehyd, and afterward pressure with a rubber plug. When the exposure has been obtained the procedure is as before. Any bleeding that may follow the removal of the pulp can be easily controlled by plugging the canals with adrenalin for a few minutes.

In my hands the average time required to completely anesthetize the pulp after exposure has been three minutes, and in some few cases thirty seconds have been sufficient. If the patient arrives with the nerve exposed and one is unable to treat it with cocain at once, it should be covered with oil of cloves, sealed in with gutta-percha, or if the latter is not easily applied, then with carbolized resin; but this should not be allowed to come in contact with the pulp, as it seems to form a slight coating over it which renders it more resistant to the action of cocain.

In some cases there is a varying amount of periostitis on the day following treatment, so the patient should be warned of this, and a counter-irritant applied over the root at the time. The periostitis seldom lasts more than one day and is never severe.

With regard to the subsequent root filling, all irritants should be avoided for fear there should be any small piece of the pulp left at the end of a root canal. I always leave a small quantity of a mummifying paste, composed of zinc oxid, alum and thymol, at the extreme end of the canal, and then fill with guttapercha as usual. It is a good plan to dip the guttapercha points into a saturated solution of thymol in oil of cinnamon. The cinnamon gradually evaporates, leaving a layer of thymol crystals lining the root canal. The root filling can of course be done at once, and the tooth also filled at the same sitting.—*British Dental Journal.*

DENTAL ETHICS. By H. F. D'Oench, D.M.D., St. Louis. Read before the St. Louis Dental Society. The subject of ethics is of such great scope, having occupied the time and energies of some of our greatest thinkers, that justice to this great field of thought is impossible in any one essay. Since this subject is of such universal interest, however, I trust that this attempt will not prove altogether uninteresting.

The science has been variously defined as follows: Moral philosophy, the philosophy of right and wrong, the science of duty, of moral principles, of moral judgment and conduct. Like all other sciences, it is both theoretical and practical; theoretical in so far as it analyzes, classifies and explains its phenomena; practical in so far as it is put into practice. Moral sense or conscience is merely a general name used to designate a series of complex phenomena; it is not a separate and distinct faculty.

An outline (necessarily brief in this sketch) of the genesis of conscience, as worked out by Herbert Spencer and accepted by such modern scientists as Wundt, Paulsen, Sutherland and others, follows:

Originally primitive men lived in mutual dread, each living alone. This was succeeded by the period of clans and tribes, one among them being chief. This period introduced political control. Following this interval, and influenced by it, the fear of the super-

natural, such as ghosts, etc., predominated. This was the birth of religion.

These three—mutual dread, succeeded by political control, and supplemented by religious feeling—in the course of time produced a fourth element, moral intuition or conscience, a vague but growing attitude of mind toward right and wrong, which is independent of the fear of law or religion, e. g., an attempt to live a moral life for the personal satisfaction or pleasure of the individual found in the fact of such morality.

Since, in the advancement of civilization, some minds were impressed more than others with the necessity of law and order, so moral sense was developed more in some minds than in others. Hence the great divergence of opinion as to what is right or wrong. There is very general agreement as to the form of rectitude, such as truth and justice, also as to such acts as murder, stealing, etc., being immoral. But in the complex civilization of to-day many questions present themselves which cannot be so readily classed, a fact which will no doubt be fully brought out in the discussion of this paper.

In the development of the child, the early environment and educational methods, combined with the influences of heredity, largely determine the character of the adult. With present-day methods of preliminary education based on a knowledge of child psychology, with the manual training courses of both the grammar and high school, the candidates for entry into our profession can be fairly well judged as to their ethical proclivities. The very acceptance of the student by the college should be a guarantee as to his fitness, both mental and moral. As members of a profession whose advancement, both scientific and social, is of such vital interest, it is of paramount importance that we accept only such material as will tend to the aforesaid advancement of our professional status.

Only a few of our schools of dentistry have thus far added the subject of ethics to their curricula, claiming in opposition that: "It should be borne in mind that the ethical sense is more or less definitely formed before the student enters the professional school. The training in ethics must begin in the kindergarten and primary school; it must have the continuous influence of the home in its development, and must be continued throughout the preparatory period. Lacking this background, the giving of a few lectures

upon dental ethics is time wasted; no student can understand dental ethics if he has no ethical sense to which to appeal."

Notwithstanding the view cited above, an editorial by Dr. Kirk in the *Cosmos* of April, 1905, we would most earnestly urge the inculcation of dental ethics by our colleges. The student who has "no ethical sense to which to appeal" is a rare exception. The object of such instruction should not be so much to instil principles of morality as to enlighten on the duties and the reasons therefor embodied in our code of ethics. Our code and its requirements in every detail should be known before leaving the institution, so that an intelligent appreciation of the fact that "to be ethical" means vastly more than merely the avoidance of advertising, as seems to be the general impression among students. Nine-tenths of recent graduates have not seen a copy of the code. In our societies we should make it one of the duties of the secretary to present to each new member a copy of the constitution and code of ethics at the time of his enrollment.

The future standing of our profession as compared with that of law and medicine will depend largely on our growth along scientific and ethical lines. As the public gradually realizes that dentistry is more than a mechanical art, that its roots are founded in science, that the title of dentist is synonymous with education of a high order, then will we receive that high degree of consideration the lack of which is at present so much bewailed in some quarters.

In conclusion, I wish to call your attention to these two questions:

First. Is the prescribing of drugs or dentifrices in whose manufacture or sale the dentist has a monetary interest in accordance with the spirit of ethical practice?

Second. To the practice of some of our specialists of paying a percentage of fee to the general practitioner referring them cases. On this point the code of the National Medical Association reads as follows (Chapter II, Section 4):

"It is derogatory to professional character for physicians to pay or offer to pay commissions to any person whosoever who may recommend to them patients requiring general or special treatment or surgical operations. It is equally derogatory to professional character for physicians to solicit or receive commissions."

The code of the National Dental Association is silent on this subject. Should this be so?—*Dental Era.*

A FEW THOUGHTS ON ORTHODONTIA. By Burt Abell, D.D.S., Toledo, O. Read before the Toledo Dental Society. A few years ago if by chance a paper on this subject crept into a program the essayist frequently found himself addressing nearly empty seats. To-day the progressive dentists want to know about it, and I have noticed that the discussions are as interesting and animated as those upon any other phase of dentistry. This is most gratifying, for although the dentist may not, and I believe never should attempt operations in orthodontia himself, yet he should understand the subject sufficiently to recognize malocclusion and be interested enough to be watching for it among his patients.

While dentistry has been making wonderful strides in the last fifty years, orthodontia has received but little attention, and that at the hands of but a few men. Yet it is evident that malocclusion has been the portion of man from time immemorial. A few of the great ones like Evans, Dwinelle, Farrar, Jackson and others have done what they could as time progressed, each a step in advance of his predecessor, yet all working in the dark till the time of Dr. Angle and his discovery of the law of occlusion. He defines normal occlusion of the teeth as "That position they occupy when they are in the greatest harmony with their fellows in the same arch, as well as with those in the opposite one." The whole subject of orthodontia resolves itself into a study of occlusion and of the occlusal planes, and the practice of orthodontia becomes the intelligent effort of restoring maloccluding teeth to normal positions.

Previous to this discovery, orthodontia was but the history of appliances; to-day it has become a science and the appliances but a means to an end. Its underlying principles are deep as the laws of being, and must be fully recognized and heeded by one who seeks perfection in practice.

We know that occlusion has the most marked effect on facial harmony. When we see weak chins, pinched faces, and protruding lips we know it is because of inharmony of the occlusal planes. Faces that are the despair of their possessors and the sorrow of parents are made pleasing and often beautiful by restoring the harmony of these same occlusal planes.

We have also discovered that there is the most intimate relation between the teeth and the nasal tract. The pinched and narrowed maxillae, receding chin and protruding upper incisors are, in the

majority of cases, but the legitimate and logical result of nasal obstructions. In the effort to get air the lip is raised and no longer acts as a retainer to the incisors, and they are forced out by the tongue and lower lip. The levators constantly raising the lip, compress the arch at the region of the alae of the nose still further adding to the deformity. The mouth being open, the mucous membrane becomes dry and in the effort to moisten it, the lower lip performs the function of the upper and presses the lower incisors lingually. This, together with the half open, relaxed condition of the mouth eventually drift the lowers into distal occlusion and the weak chin is in evidence. As every point on the lower is narrower than the corresponding point on the upper, the cusps of the lower in their distal position, as they interdigitate with those of the upper, narrow the maxillae still more. All this because of nasal obstructions. Of course the prognosis of such a case presupposes the removal of the adenoids before beginning any movement of the teeth. These cases are particularly hard to retain as the habit of mouth breathing is a hard one to break and if persisted in, a normal lip is impossible. What the hoop is to the cask, the normal lip is to the incisors, and its value in retention can not be overestimated.

We have also come to know that the laws that underlie proper vocalization are co-relative with those of normal occlusion. The difference between the violin and the box is largely one of contour. With the teeth out of harmony the position of their alveoli and supporting bony plates of palate and nose are warped out of shape, so to speak, and the voice takes on qualities that are not pleasant to the ear. Then, too, the position of the teeth themselves often interferes with the tongue, with the resultant lisp. Before the discovery of this law of occlusion these defects were recognized and deplored and their correction attempted, but with indifferent results all too frequently. Now we know we have to go a step farther and put the teeth in normal relations and hold them there till new bone forms around them, and their interdigitating cusps will retain them in their proper positions. In their excursions they carry with them the alveoli and bony plates to proper positions with the resultant improvement in vocalization.

Occlusion, then, being so important, we look for a key to the situation, and find it in the first permanent molar. Erupting as it does at six and one-half years (typically) it but just gets fully

erupted and firmly seated in its place when the temporary teeth begin to be shed and the corresponding permanent ones take their places. In the interim and before there is occlusion of the incoming teeth, this tooth preserves the proper length of the bite and the face has the proper length intended by Nature. If for any reason these teeth be lost before the eruption of the major portion of the permanent teeth, the face takes on that accordion-like-shut-together look so displeasing to the artistic sense. Frequently this tooth erupts in a malposition, being lingual, buccal, mesial, or distal, or in any of the seven malpositions. Knowing as we do its important influence on the rest of dentition its immediate correction is indicated. This is a case in which the old fashioned advice to "let them alone and Nature will take care of them" will not work. The facts are, that malocclusion is progressive, the limit of movement being reached only when the extreme of interdigitation is accomplished. So important is it that this molar should be in position that I think every dentist would be warranted in calling to his office every one of his little patients for inspection; and if the molars are not in normal occlusion, advise the correction of the deformity at once. He could do them no better service. It's like the ounce of prevention as compared with the pound of cure. Let me say, too, that unless he inspects with the eye of experience and good judgment he will often think them in normal occlusion because the cusps interdigitate in proper mesio-distal relations, when the facts are that both upper and lower are lingual to normal, and the line of occlusion will be disturbed when the permanent teeth are erupted. This line of occlusion extends from the buccal groove of the first permanent lower molar on one side, across the buccal cusps of the bicuspids and along the apex of the cuspid and incisive edges of the incisors around to the buccal groove of the other first permanent molar. It can be readily seen that if the ends of the arch are approximated there must be a disturbance of the intermediate points. We must bear in mind that the erupting teeth are as large as they ever will be, and require as much room in the arch as they ever will, and provision must be made for them.

The malposition that the dentist will most readily recognize is the mesial or distal. (Let me say, in passing, to avoid misunderstanding, that in this paper, points are considered mesial when anterior to normal, and distal when posterior to normal.) We can readily

see that with the lower molars one point mesial or distal, each erupting tooth must take a corresponding malposition, while if the molars are in their normal position other things being equal, the erupting teeth must drop into their proper places. Hence the necessity of early recognizing and correcting the deformity if it exists.

While this first permanent molar is the most important tooth in the mouth, we must recognize the fact that every tooth has its place to fill in this plan of occlusion and, if missing, no other tooth can serve for it and simultaneously bear its own responsibility. To the ignorant a "tooth is a tooth," a unit in thirty-two, and if it offends it is to be "plucked out"; but to the orthodontist its value becomes apparent and its loss one of our most serious problems, not alone for its individual value, but because of its relation to all its fellows, not alone in its own arch, but also in both arches. Given a case where all the teeth are present and although they may be in pronounced malocclusion the prognosis becomes easy. But when a tooth is missing there is a disturbance in the balance of the art relations and harmony of the occlusal planes. Dr. Angle gives it as a law that the "sizes, forms, interdigitating surfaces, and positions of the teeth in the arches are such as to give to one another, singly and collectively, the greatest possible support in all directions." If this support is withdrawn at any point the result is disastrous. It is like a chain, broken if one link be gone; or an arch, it falls if one block be removed. Even though the remaining teeth have approximated and the space obliterated it must be regained and the missing tooth or teeth supplied. It is not optional, it is imperative. Can you think of any greater professional crime that a dentist can commit against a confiding applicant for relief from deformity than the socalled "extradition for prevention"? If the cases were all adults the offense would not be so great, but the majority of these abused and maltreated cases are children for whom every effort of culture, refinement and beauty is put forth. Surely it becomes our duty to do that which is nearest in accord with nature's demand. Far better let the case alone till time and opportunity place the patient within the reach of skilled assistance. The damage once done can never be repaired.

It should be, and I believe is, in the majority of cases, the aim of the dentist to preserve, restore and beautify the teeth. The majority

of dentists are absorbed in the lines of work in which they are most interested, and fail to see the deformed and twisted faces of the children who visit them; deformed because of these malposed teeth, for in proportion as there is malocclusion will there be facial deformity. There is growing up around us a generation of children more numerous than we know, who need the help of the dentists in this direction. He alone is the one, who, by virtue of his position, is responsible and able to help. Patients place themselves in his hands with implicit confidence that he will do all in his power to give them a perfect armament of teeth. If they do not require at his hands more perfect faces as well, it is because of their ignorance of the possibilities of orthodontia. The public is waking up and demanding that the more apparent deformities be attended to, but they see only the symptoms. It has become the duty of the dentist to give as intelligent advice on the correction of malocclusion as upon any other phase of dentistry.

All our colleges are recognizing this demand and striving to meet it. In the majority of cases they find a handicap in the student himself. He enters college to learn to fill teeth and to get his diploma. Perhaps before entering college he had never heard of orthodontia and meets it with a spirit of antagonism. Yet it does seem that if the principles of orthodontia were laid before him to the extent that he may recognize malocclusion in all its forms, and understand the attendant evils, and not be required to fritter away valuable time making useless appliances that any intelligent man would gladly grasp the opportunity to thus add to his equipment. Perhaps not one in three hundred would care to become an orthodontist, but all should be taught to know a case of malocclusion when they see it. I say he should be able to give advice, for he will find, for inherent reasons, the practice of orthodontia and the practice of dentistry can not be carried on successfully in the same office by the same operator. Like oil and water, they will not mix. Some have tried devoting certain days to orthodontia. This might work were there no overlapping of duties. The stress of the regular work is felt all the week and crowds in to the expense of orthodontia. On the other hand, accidents will happen to appliances and patients present themselves on operative days and attention must be given or ground is lost. It comes in as an irritation in the day's occupation and we lose our love for it and are tempted to do

less than our best. The orthodontist must possess in a marked degree the capacity for taking pains. Nothing must be left "good enough," for the standard set by the new school of orthodontia is perfection, a high one, indeed. Time is required to fully study each case in all its phases before beginning treatment, which when once begun, must be intelligently followed with no disturbing influences. The old trite saying "the man who really succeeds in life is the one who does one thing well" is apropos.

The one who would successfully regulate teeth must decide, when a case presents, which of the many causes of irregularities is to be met and overcome; whether it be misuse of the teeth, tongue, finger or thumb sucking, big tongue, fraenum, labia, cleft palate, pyorrhea, overretention or premature extraction of the temporary teeth; or (dare I say it) bad fillings, or so called extraction for prevention, or any two or more. Let him but disregard any of them and fail to meet it, and the case returns with beautiful precision to its pristine unloveliness.

Let him but miscalculate the stability of his anchorage and destroy it, and he is like a mariner afloat without oar, sail or rudder. He must take into account the effect of tooth movement on the alveolus, jaws and muscles; how far and what groups of peridental fibers to stretch. He must understand how to do "first things first" or he prolongs his case to the point of exhaustion of all patience.

Neither must he mistake and treat the symptom for the disease, but go back to first principles. He must know whether he had malocclusion of the teeth to deal with or malposition of the arches. And last, but not least, if he has been so fortunate as to get every tooth into normal occlusion, he must know how to retain them with appliances that are efficient, cleanly, sightly, and of least bulk. In fact, the aspirant to success in orthodontia, whether dentist or specialist, must, as they say in Georgia, "know where he's at" from start to finish.

When he has finished and brought beauty and order out of chaos, then it is that his reward comes in a wealth of gratitude that is aroused in no other branch of dentistry.

To sum up, then:

Orthodontia is a science with normal occlusion as its basis.

Any deviation from normal occlusion is malocclusion.

That malocclusion has an intimate relation to the facial harmony and nasal and vocal tracts.

That while the key to normal occlusion is the first permanent molar, which, when erupted in a malposition, it becomes necessary to correct at the earliest possible moment, yet every tooth has its part to play in the dental economy, and must be retained, or, if lost, a substitute provided; consequently—

It is a crime to extract permanent teeth for young patients.

That the public demands that the dentist should be well informed concerning normal occlusion and the causes, forms and effects of its perversion that he can intelligently advise his patients.

And, lastly, that the practice of orthodontia and the regular practice of dentistry are incompatible in the same office.—*Dentist's Magazine.*

THE BANDLESS PORCELAIN CROWN. By U. M. Richardson, D.D.S., Chicago. Read before the Wisconsin State Dental Society. After several years I have concluded that for incisors, cuspids, bicuspids and molars the so-called Richmond crown, the baked porcelain crown, or any other crown with a band is not fully up to that high standard of excellence which is demanded when it becomes necessary to replace the natural crowns of the teeth.

In presenting this paper it is not my purpose to extol the merits of a new crown, but rather to direct attention to some of the advantages resulting from the use of the bandless baked porcelain crown.

Before mentioning the advantages of the bandless crown over those with a band encircling the root of the tooth, I will briefly refer to some of the disadvantages of the latter. First, perhaps, in importance is the irritation of the gum resulting from the presence of the band underneath the free margin of the gum.

Although the band may be fitted with great care, so that apparently there is no projection between the band and the root, and even though it be ever so thin it acts as a foreign body and is a constant source of irritation, however slight it may be. If the band is fitted so as to be entirely under the gum, it is the observation of critical dentists who have made it to their interest, observing the results from the Richmond crown, that the band not

only becomes visible after a short time, but more than that, at the point of junction between the band and the root there is a seat of irritation resulting in absorption and its sequelæ.

It is not natural to have a foreign substance occupying the space between the free margin of the gum and the tooth. After the gum has receded from the band that portion exposed becomes unhealthy, invites decomposition, resulting in decay.

It should be our constant endeavor to conceal the line of junction by our art, therefore some method should be followed whereby the joint between the crown and the root can be permanently concealed. As the gum will sooner or later recede from the band, the latter will then be exposed to view.

At the base of the body of a baked porcelain crown with a band there is a space between the porcelain and the platinum cope, since porcelain and platinum do not unite. This space in many cases causes a dark blue line to appear at the joint between the porcelain and the metal. This latter unsightly and unartful condition is due to the penetration and decomposition of secretions and is, of course, decidedly objectionable. It is impracticable to prevent the darkening in the region of the cope of the crown from being transmitted to the porcelain at its base, thereby causing an unnatural appearance.

Among the advantages of a bandless porcelain crown over any crown with a band are the following: A bandless baked porcelain crown when plate, post and facing are used, if the plate is properly burnished to the root to be crowned and the facing soldered to the post, the facing being ground so as to have the same contour as the end of the root and polished so as to have a smooth surface throughout, is perfectly healthy and non-irritating to the gum, because it has practically the same contour and a similar surface to the original tooth. The gum between the crown and the tooth will remain intact and perform its normal function, and the liability to irritation is reduced to a minimum since the crown and the root form one continuous smooth surface and are more harmonious to the gum tissue.

In the Logan crown the union between the crown and the pin is the strongest that can be obtained, because the crown is constructed of one mass of porcelain which has been moulded and baked with a high fusing body. I cannot see any advantage in

confining one's efforts to the use of any style of crown which does not afford the greatest possible variety of moulds and shades as the ordinary facing. It is my belief that all ready-made crowns should never be adopted, as they were originally designed and intended for no other than temporary purposes.

In the baked bandless porcelain crown that I make the root is ground even with the gum margin by means of a thin carborundum wheel. The root is trimmed to the free margin of the gum with a convex surface and cut under the gum on the labial and lingual sides as far as possible without injuring the gum. The end of the root is made to follow the outline of the gum, being highest on the labial and lowest on the lingual side. By cutting the groove in the center of the root from labial to lingual there is more space for the porcelain around the post. This lessens the rotary movement and gives more space for fusing the porcelain to the facing and also lessens the tendency of the plate to draw up from the lingual portion of the root, reducing the liability of fracture of the baked portion of the porcelain that is baked to the facing.

The cutting of the groove and trimming the edges of the root is best done with a large inverted-cone bur, but at high speed. If the handpiece is held firmly and a sharp bur is used there is slight discomfort to the patient. My reason for trimming the root under the gum is that the joint is entirely protected by the gum and the porcelain of the crown being smooth, there is no room for accumulation of food and there will be no recession of the gum.

The most permanent means of attachment of a crown is cement. Another objection to a crown with a band is mounting the crown upon the root. After the canal has been dried and filled with cement the crown is forced into its proper position and the only means of exit of the surplus cement being between the band and the root, the cement is forced against the gum, thereby causing the patient to suffer pain from pressure and irritation of the cement. When the bandless crown is set the surplus cement flows straight out from between the crown and the root without inconvenience to the patient.

In fitting the bandless porcelain crown to the root, if the same care is taken as in fitting the band the operator then can reproduce the natural crown of the tooth in every way. You have a crown as near perfect as any crown can be.—*Dental Review.*

THE TOOTH BRUSH. By Henry Barnes, M.D., Cleveland, Ohio. That one should write concerning an article so long in use, millions of which are used every year, seems at first thought strange; but if this good and useful, yea, indispensable, article is wrongly used by any considerable number of persons why should it not be a subject for careful consideration?

I bring to your notice some thoughts which have occupied my time and attention more particularly for a few years past. This subject was brought forcibly to my notice while investigating the subject of erosion, or rather its peculiar manifestation as known to the observing dentist. I found in many cases that the tooth brush was, as used, detrimental to tooth tissue, causing abrasion of surfaces already eroded and probably responsible for many so-called cases of erosion. It is not to be expected that all, or even a great number of dentists, will coincide with this view. However, the best way to prove or disprove a theory is to put it into practice, and to this end I hope to enlist the thought of every dentist who shall read this article, to the end that he will closely study all cases coming under his notice, and, so far as his conclusions may confirm mine, unite to prevent in the growing generation the destruction of tissues so necessary for the health and well-being of those who shall come under our immediate charge. Dentists should be educators instructing their patients in right methods and not merely mechanics filling cavities, inserting dentures, bridges, etc.

Do you not see every day, or nearly so, patients who religiously go through the motions of cleansing with the brush whose teeth are not cleansed of the deposit from the last meal? You have noticed the fact that on the cervical borders of the molars, above and below, the debris is seldom or never removed. You have also noticed that in right-handed persons the surface, triangular in shape, at the angle of the lower jaw, on the right side, including the cuspid, first bicuspid and the lateral, is frequently encrusted, showing very plainly that the brush seldom, if ever, passes over this surface. You are also aware that these same mouths present very clean surfaces at the angles of the upper jaw, notably the cuspids and their immediate region—and all this in the mouths of those who are consoling themselves that they "brush thoroughly."

For this marriage of cleanliness and uncleanliness there must

be a cause. I believe I have found it to rest in the way in which the brush is used. Children, when first taught the use of the brush, grasp it as they would an ax, distort the features by making tense the masseter muscles and vigorously brush, the arm the while stiff to the elbow joint; with the result as heretofore noticed—that the entire dental surface is not cleansed. That which we learn as children we carry with us into adult life. How important, therefore, that our instruction to the child shall be the right instruction —carefully given and religiously supervised.

With stiff elbow brushing, the brush describes an arc of a circle or curved line. The first impact upon tooth tissue is at the angle of the mouth—most frequently the cervical portion of the upper cuspid crossing it at an obtuse angle, resulting so often in those erosions, so-called, but which I believe frequently have their origin in this wrong use of the brush. True it is this point, and until we have more definite information concerning it, will be debatable ground. Follow if you will the direction of the brush in all portions of the mouth and you will find a good reason for the conditions described above. The tense masseters prevent the brush reaching any surface on the molars except the bucco-occlusal angles; the attempt to brush the front teeth, changing from distal brushing, leaves the trianglar shape before mentioned not touched. One point I have not touched upon and that is brushing with the ends of the bristles in contact with tooth surface. This, if a stiff brush is used, is destructive of tooth and gum tissue. How often have you seen the gums at the angles pushed out of place, their festoons destroyed, showing very plainly a mechanical abrasion of those surfaces. The lingual surfaces are not given much consideration because they are not subject to the same abuse as to abrasion, although they are often very unclean, especially on their cervical borders.

Having described conditions known to all, it is quite proper that a remedy should follow, and to the more firmly fix the remedy in the mind let us offer a few DON'TS.

Do not brush from the elbow.

Do not allow the ends of bristles to traverse over tooth or gum tissue, i. e., do not hold the bristles at right angles to the longitudinal axis of the teeth.

Do not distort the features.

Do not allow the masseter muscles to become tense during brushing.

Having given our don'ts, we proceed to our DO'S.

Hold the brush as you would your pen, loosely, the thumb under the handle for brushing lower teeth; reverse for upper, bristles always pointing to apices of roots. Brush from wrist, holding the hand in front of mouth, thus keeping handle of brush always at right angles to the long axis of the teeth, allowing the cheeks to force the brush against labial and buccal surfaces. This is all the force necessary to use.

If patient cannot relax the muscles direct him to "tongue talk" and this will immediately relax every tense muscle. Use a medium soft brush, and, for cleanliness, keep it in a wide-mouth bottle.

I have purposely stated nothing about lingual brushing, but will say now so far as possible follow out the lines as given above for labial and buccal brushing. Of tooth powders and mouth washes there is nothing to say, as every dentist has his preference in this field.—*Dentist's Magazine.*

MUMMIFYING AGENTS IN DENTAL PRACTICE.—Mummifying agents are various and act by drying, coagulating and hardening the tissues and permeating them with an antiseptic, the object being to so alter the tissue as to render it unfavorable to the growth of germs. Copper sulfate, tannic acid, formic aldehyd, hydronaphthol, dehydrated potash, and alum are examples. The mummifying agent which I have used is from the formula of Dr. Soderberg of New South Wales: ℞.—Alum exsiccatum, thymol, glycerin, of each equal parts; zinc oxid, to make stiff paste. It is to be understood that aseptic conditions are essential, and therefore the practice is to be confined to the treatment of freshly exposed or uninfected pulps. The pulp is devitalized by means of arsenious acid, and under aseptic conditions the coronal portion is removed by an engine bur. The coronal chamber is cleansed and dried, the mummifying agent under slight pressure is placed in direct contact with the amputated radicular portions, and the whole sealed with oxyphosphate cement. In some cases, due to the action of dried alum, there is discomfort following the treatment, which subsides at the end of one or two days, and the result in my experience has been absolutely satisfactory. In but one tooth so treated have I had to remove a filling and retreat, which I attributed to faulty application. Within the last fortnight I have examined several of my cases without in any instance observing any abnormal condition of the pericementum or overlying gum tissue.—F. D. LAMB, *Dental Review.* (*Dental Cosmos.*)

The Dental Digest.

PUBLISHED THE LAST WEEK OF EVERY MONTH

At 2231 Prairie Avenue, Chicago,

Where All Communications Should be Addressed.

Editorial.

STATE SOCIETIES.

Are you a member of your State Society? If not, why not? Never did a practitioner of dentistry make a greater mistake than that of neglecting to associate himself with his fellow practitioner in society work.

The reasons are numerous. In the first place, the practice of dentistry pure and simple, brings the operator into contact with but very few individuals. His work confines him so closely to his office that he has but little time or opportunity for meeting others than his patients. The occupation is one that has a narrowing influence upon the mind. Looking into the mouth of a patient or into an alley is not conducive to great thoughts, nor to the development of the intellect; therefore, the practitioner should not only continue to study but associate himself with his fellow practitioners as much as possible. First, because of the broadening influence, and, secondly, because of the knowledge which he will acquire from contact with live men in the profession.

This rule will apply to any class of dentists either highly educated or otherwise; so that from our point of view, which is from a long personal experience, the man who practises dentistry without such association with his fellow practitioners handicaps himself immeasurably and he does not become as competent as he might and would be, did he associate himself with dental societies at least once a year; and if he attends a local society each month it will be just that much better for him. If the readers of the DIGEST who are not associated in society work with their fellows will take the opportunity and attend one meeting they will be surprised to find how many things are known in a general way to the society of which they have had no previous knowledge. Regardless of

how good students they may have been this applies even to the best, but particularly to that large class who are not now students and who must get their improvement by seeing what others are doing in detail.

The clinics that are provided for in the state meetings are especially for this latter class, and in view of these facts we marvel to think of the large number of practitioners who do not avail themselves of these advantages, but go on blindly and in most instances deteriorate from what they were in the beginning, having nothing to spur them on. Despite this, however, these men look askance at their competitors, jealous of what they know of them instead of getting out and associating with them both socially and professionally in an effort toward self-betterment in each sphere.

But we must not stop with the advantage which professional association will bring to the dentist. There is another side. No man practicing dentistry has the right to withhold himself and his influence for good from his fellow practitioner. We have heard times without number the objections made to joining a society. One very common one among dentists is that they are so very busy that they have not the time. To this we would reply that it is *only* the busy men who have time to do the extra things. Another is that they do not like the way the society is managed, "too much politics," etc. This we hardly have patience to discuss and would not only it comes frequently from some of the best men.

The way to remedy that is to go into the society and when you have officers or servants who are not doing their duty properly, either instruct them through the voice of the society or substitute others who will do better. Politics to that extent is not only admissible but a duty if the society is to be kept in good working order and a high standard maintained. We are not advocating this from theory only for there are several living examples of which we know.

There is only one exception to the general rule that every practitioner should belong to his local and state society; and that exception is the one called the "kicker" or the man who sees no good in anything others are doing and therefore gets no good out of it, and on the same lines of reasoning he contributes no good to others.

The fortunate individual is the one who can take a criticism as well as make one in the right spirit without offense, who can con-

vince and be convinced as to what is right. While perhaps the majority of the community who employ a professional man do not recognize the difference between a man who is alive and doing his full duty and one who is not, there is a large percentage of people who *do* recognize the man who is alive and up-to-date and in order to be such he must belong to a society.

To say nothing about the friendships formed and the knowledge gained the fact that a man belongs to a state society and is known to be a member by his fellow practitioners increases his influence and is often beneficial from the business point of view.

To the young men who have not been in the profession long and to those just coming in we especially urge early or immediate association with their profession by joining some of the societies in their state or city. The laws governing the practice of dentistry should include the qualification that in order to practice dentistry a practitioner must belong to his state society.

Notices.

ARKANSAS STATE DENTAL ASSOCIATION.

The Arkansas State Dental Association meets May 9th and 10th, 1906, at Fort Smith, Ark.

HENRY P. HOPKINS, Secretary, Argenta, Ark.

ARKANSAS STATE BOARD OF DENTAL EXAMINERS.

The State Board of Dental Examiners of Arkansas meets May 7th and 8th, 1906, at Fort Smith, Arkansas. For particulars address H. P. Hopkins, Secretary, Argenta, Ark.

FIFTH DISTRICT DENTAL SOCIETY OF STATE OF NEW YORK.

The thirty-eighth annual meeting of the Fifth District Dental Society of State of New York will be held at Vanderbilt Hotel, Syracuse, N. Y., on April 10th and 11th, 1906.

W. H. LEAK, Cor. Secy., Watertown, N. Y.

MASSACHUSETTS STATE DENTAL SOCIETY.

The annual meeting of the Massachusetts State Dental Society will be held jointly with that of the Section on Stomatology, American Medical Association, June 5-8, 1906, at Boston. The program of this meeting will be found in this issue.

MISSOURI STATE BOARD OF DENTAL EXAMINERS.

The State Board of Dental Examiners for the State of Missouri will meet, for the examination of applicants for registration, at Kansas City, May 14th, and at St. Louis, May 28th, 1906. For further particulars inquire of S. C. A. Rubey, Secretary, Clinton, Mo.

KANSAS STATE DENTAL ASSOCIATION.

The next annual session of the Kansas State Dental Association will be held in Topeka, May 10, 11, 12, 1906. Dr. J. E. Nyman of Chicago, and Dr. George Edwin Hunt of Indianapolis, Ind., will be present as our guests.

All ethical dentists are cordially invited to attend.

F. O. HETRICK, Secretary, Ottawa, Kan.

FLORIDA STATE DENTAL SOCIETY.

The date of the twenty-third annual meeting of the Florida State Dental Society has been changed to May 16, 1906, and continuing three days. It will be held at the Continental Hotel, Atlantic Beach (near Jacksonville).

For further particulars address Carroll H. Frink, Secretary, Fernandina, Fla.

ALUMNI ASSOCIATION OF THE DENTAL DEPARTMENT OF WASHINGTON UNIVERSITY.

The Alumni Association of the Dental Department of Washington University (Missouri Dental College) will hold their annual clinic in the College Building, 27th and Locust Sts., Tuesday, May 22, 1906.

Address all communications to Dr. F. B. Lynott, Secretary, Friscoe Bldg., St. Louis, Mo.

GEORGIA STATE DENTAL SOCIETY.

The thirty-eighth annual meeting of the Georgia State Dental Society will be held in Savannah, Ga., June 19, 20, 21, 1906. An excellent program of papers and clinics is being prepared, and we anticipate a most pleasant, as well as profitable, meeting. A cordial invitation is extended to all ethical members of the profession.

A. H. MCNEILL, Cor. Secy., Athens, Ga.

MISSOURI STATE DENTAL ASSOCIATION.

The forty-first annual meeting of the Missouri State Dental Association will be held this year at Springfield, Mo., June 5, 6, 7, inclusive.

An unusually interesting program is being arranged. A number of men eminent in the profession have signified their intention of being present, and the meeting promises to be the best in the history of the Association.

All ethical dentists are cordially invited to be present.

SAM T. BASSETT, Corresponding Secretary, St. Louis, Mo.

MARYLAND BOARD OF DENTAL EXAMINERS.

The Maryland Board of Dental Examiners will meet, for examination of candidates for certificate, May 14 and 15, 1906, at the Dental Department of the Baltimore Medical College, Baltimore, at 9 a. m.

For application blanks and all information apply to F. F. Drew, Secretary, 701 N. Howard St., Baltimore.

OKLAHOMA DENTAL ASSOCIATION.

The sixteenth annual meeting of the Oklahoma Dental Association will be held in Oklahoma City, Okla., May 14, 15 and 16, 1906. The profession is cordially invited to attend.

Dental manufacturers' exhibits desired. For particulars address C. L. White, Secretary, 208 Bassett Bldg., Oklahoma City.

INDIANA STATE BOARD OF DENTAL EXAMINERS.

The Indiana State Board of Dental Examiners will hold its next meeting in the Capitol Building at Indianapolis, beginning at 9 o'clock Tuesday, June 12, 1906. All applications for registration in the State will be examined at this time. Applications must be filed with the Secretary not less than five days prior to the above date. For further information apply to F. R. Henshaw, Secretary, Middletown, Ind.

KENTUCKY STATE DENTAL ASSOCIATION.

The time and place of annual meeting of the Kentucky State Dental Association have been changed. It will be held in Louisville on June 12th, 13th and 14th, 1906. Special railroad rates from all points, beginning Saturday, June 9th. A big meeting is expected. Send subject of paper, or clinic, or both, immediately to W. M. Randall, Secretary, corner Brook and Broadway, Louisville, Ky.

RESOLUTIONS ON THE DEATH OF CHARLES C. CHITTENDEN, D.D.S.

WHEREAS, The Chicago Odontographic Society has learned of the recent death of Charles C. Chittenden, D.D.S., of Madison, Wis.; and

WHEREAS, He was well known to, and a member of, this body and on terms of intimacy and love with many of its members; and,

WHEREAS, The standards of dental education have been greatly advanced by his pronounced personal activity and literary efforts, and that his purity, his high character as a man in his profession, have endeared him to this society, of which he has been a frequent guest for many years; therefore, be it

Resolved, That we give expression of our love and high regard for him, that we deeply feel his loss, that we are proud of his memory, and ac-

knowledge the great value of his life to the profession of dentistry; and, be it further

Resolved, That this memorial be presented to the family of the deceased; that a copy be sent to the dental journals, and the same spread upon the records of this society.

CHICAGO ODONTOGRAPHIC SOCIETY,
J. G. REID, D.D.S.,
E. J. PERRY, D.D.S.,
EDMUND NOYES, D.D.S.
} Committee.

NEBRASKA STATE DENTAL SOCIETY.

The thirtieth annual meeting of the Nebraska State Dental Society will be held in Omaha, May 15, 16 and 17, 1906, at the Creighton Dental College. Dr. L. P. Haskell and Dr. J. N. MacDowell, both of Chicago, will be with us, and the indications are that we will have the best meeting in the history of the society. A cordial invitation is extended to all reputable practitioners to attend.

M. E. VANCE, Corresponding Secretary, Lincoln, Neb.

MISSISSIPPI DENTAL ASSOCIATION.

The thirteenth annual meeting of the Mississippi Dental Association will meet in Gulfport, June 6, 7, and 8, 1906.

All ethical practitioners of this and other states are cordially invited to attend. Every effort is being made to have this the largest and most profitable meeting ever held, and the pleasures of Gulfport, on the coast, at this time of year, is a feature in itself.

Reduced hotel accommodations and the usual reduced rates on all railroads will be obtained.

For complete details address the Secretary.

E. DOUGLAS HOOD, Secretary, Tupelo, Miss.

CLINICAL CONFERENCE OF THE NEW JERSEY STATE DENTAL SOCIETY.

An opportunity is afforded anyone having a difficult case in Surgery, Orthodontia, Operative or Prosthetic Dentistry, to present the case for consultation at the coming meeting in July at Asbury Park, N. J. It is hoped that advantage will be taken of this chance to get the opinion and advice of men of exceptional ability in their special lines. Correspondence is solicited. The committee desires a concise history of the cases on or before May 30th, if possible.

A. PERCY ROBERTS, Elizabeth.
J. A. WAAS, Hammonton.
F. K. HEAZELTON, Trenton.
W. W. CRATE, Camden.
J. G. HALSEY, Chairman, Swedesboro, N. J.
SARAH G. JACKSON, Vineland.
W. T. GELSTON, Camden.

SOUTHERN WISCONSIN DENTAL ASSOCIATION.

The twelfth annual meeting of the Southern Wisconsin Dental Association will be held at Milwaukee, Wis., May 30 and 31, 1906. We want to lay special stress on the clinical part of our meeting, as we are going to try and make it one of the largest the state has ever had. We have some of the best clinicians coming from other states, and we expect to have a rousing good meeting.

All ethical practitioners are cordially invited to meet with us.

C. W. COLLYER, Secy, Clinton, Wis.

NEW JERSEY STATE BOARD OF REGISTRATION AND EXAMINATION IN DENTISTRY.

The New Jersey State Board of Registration and Examination in Dentistry will hold the semi-annual examination in Trenton, N. J., on the 9th, 10th, 11th, 12th, and 13th of July, 1906. Practical and theoretical work all completed at that time.

Sessions begin promptly at 9 a. m. each day.

All applications must be in the hands of the Secretary by July 1st. For further information kindly address the Secretary.

CHARLES A. MEEKER, D.D.S., 29 Fulton St., Newark, N. J.

ALUMNI ASSOCIATION OF THE ST. LOUIS DENTAL COLLEGE.

The annual clinic and class reunion of the Alumni Association of the St. Louis Dental College will be held in St. Louis, May 7th and 8th, of this year. The various committees have been working energetically, each in its different line, and report that this will be the largest clinic given by the association. The Committee on Essays have a number of valuable and original papers. The Committee on Clinics have already secured eighty-five interesting clinics, and expect to have one hundred the day of the clinic.

For further information address Dr. R. O. Butts, Secretary, St. Louis, Mo.

IN MEMORIAM.

Dr. Luther W. Skidmore was born in Morris, Ill., June 2, 1863. Thus at the time of his death he was almost 43 years of age.

During the early part of his life he grew to manhood and attended the normal school of his native town.

When nineteen years old, he entered the University of Philadelphia, Pa., and graduated two years later, in 1884. The following January, 1885, he commenced the practice of dentistry in Moline, Ill., and for twenty-one years has maintained a reputation and example, which are well worthy the following of any of our young or old, within or out of the dental profession.

Dr. Skidmore was not only closely identified with the State Dental Society, the First District Society of Illinois, the Tri-City Dental Society, and the Rock Island County Dental Society, but was actively and energetically engaged in every effort toward the success and welfare of each and every society above mentioned. He served as president of nearly all of these societies, and was recently elected vice-president of the State Dental Society.

Dr. Skidmore was genial of disposition, kindly of heart, and ever ready to help his fellow men, which won for him a large circle of friends. He was a member of the Doric Lodge, No. 319, of Masons; also of St. George Lodge of Knights of Pythias, and of the Modern Woodmen.

Dr. Skidmore is survived by his mother (Mrs. D. Hall Skidmore), his brothers, Dr. Wallace G. Skidmore, now of Minneapolis, and Byron G. Skidmore of Moline, Ill., and his daughter, Alice.

In respect to the memory of Dr. L. W. Skidmore of Moline, Ill., the Rock Island County Dental Society adopted the following resolutions Feb. 27, 1906:

WHEREAS, The hand of Providence has removed from our midst our honored brother in the profession, Dr. L. W. Skidmore; and,

WHEREAS, In his death, we have lost one of our most active members, who, until his death, evinced a warm interest in the welfare of our association; and, as a member of the various societies of the state, he gave freely of his time and energy for their betterment and advancement; therefore, be it

Resolved, that we, the members of the Rock Island County Dental Society, desire and do express to his family our sympathy and sorrow in their affliction, and our admiration for the professional and personal qualities of our member; he was our friend, ever ready to extend a helping hand to a brother; and,

Resolved, That these resolutions be spread upon the records of our association: a copy to be sent to the family of our departed brother, and others to the dental journals for publication.

ROCK ISLAND COUNTY DENTAL SOCIETY,
W. T. MAGILL,
W. G. HAY,
H. G. TRENT. } Committee.

SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION.

The annual meeting of the Section on Stomatology, American Medical Association, will be held at Boston, Mass., June 5-8, 1906. Those wishing to join the section may do so by writing to the secretary for blank, to be filled out and signed by the present president and secretary of their state or local dental society, enclosing with same, when forwarded, five dollars

($5.00) to the Secretary of the Section on Stomatology, Eugene S. Talbot, 103 State st., Chicago.

The program of the meeting of the Section is as follows:

SECTION ON STOMATOLOGY, AMERICAN MEDICAL ASSOCIATION.

1. Chairman's Address, H. P. Carlton, San Francisco.
2. The Structure of the Jaws of the Lower Invertebrates, J. S. Kingsley, Boston, Mass.
3. Development of the Human Jaw, Chas. L. Minot, Boston, Mass.
4. Palates of the Feeble-Minded, Walter Channing, Brookline, Mass.
5. The Reflexes of Dentition from the Physician's Standpoint. Discussion opened by Chas. Hunter Dunn, Boston; Thos. Morgan Rotch, Boston; A. C. Cotton, Chicago.
6. Gingival Manifestations of Metabolic Disorders, Alfred C. Croftan, Chicago.
7. Interstitial Gingivitis Produced by Autointoxication as Indicated by the Urine and Blood Pressure, Eugene S. Talbot, Chicago.
8. Treatment of Loosened Teeth, M. L. Rhein, New York City.
9. Conservatism in the Treatment of Infants with Hare-lip and Cleft Palate, G. V. I. Brown, Milwaukee, Wis.
10. Conservative Surgery of the Lip, Thos. Fillebrown, Boston.
11. The Prevention of Disfiguring Scars About the Face, M. I. Schamberg, Philadelphia.
12. Some Pathologic Features of the Pulp, V. A. Latham, Chicago.
13. The Relation of Systemic Diseases to the Conditions of the Oral Cavity, James E. Power, Providence.
14. Medical Phases of Dental Disorders, Samuel H. Hopkins, Boston.
15. The Botanical Diagnosis of Leptothrix Hacemosa and Its Relation to the Modern Doctrine of Bacteriology, Filandro Vicentini, Chieti, Italy.
16. Practical Innervation of the Trifacial Nerve, H. M. Fletcher, Cincinnati, Ohio.
17. Practical Ethics, George F. Eames, Boston, Mass.
18. Two Cases of Infantile Scurvy, Alice M. Stevens, Boston, Mass.

H. P. CARLTON, Chairman.
EUGENE S. TALBOT, Secretary.

LATEST DENTAL PATENTS.

810,611. Dental obtunder, Wesley F. Blasingame, Moultrie, Ga.
810,712. Artificial denture, John M. Card, Olean, N. Y.
810,713. Artificial denture, John M. Card, Olean, N. Y.
810,842. Artificial denture, John M. Card, Olean, N. Y.
810,954. Toothpick holder, Wilhelm Loewen, Glatz, Germany.
811,370. Dental cam, Wm. Brush, Weehawken, N. J.
811,442. Dental and surgical lamp, Clarence F. Rodgers, Conneaut, Ohio.
811,479. Dental compress, Nathan L. Burke, Benton, Harbor, Mich.
811,866. Mirror for surgical, dental, and the like uses, Robert Walker, Newark, N. J.

811,848. Dental clamp, Edson L. Hutchinson, Honolulu, Hawaii.
811,849. Teeth separator, Edson L. Hutchinson, Honolulu, Hawaii.
811,864. Dental and surgical obtunder, Wm. L. Moore and E. L. Hutchinson, Honolulu, Hawaii.
812,328. Dental matrix, Wm. Crenshaw, Atlanta, Ga.
812,395. Portable dental furnace, Frederick S. Belyea, Brookline, Mass.
812,567. Dental instrument holder, James W. Ivory, Philadelphia, Pa.

News Summary.

NOTICE.—We regret being unable to include in the News Summary department of this issue the usual items covering obituary, marriages, and other live news.

The omission, however, is caused by the material from which this news is culled having gone astray in the South, where it had been sent in an endeavor to reach the editor *pro tem.*

Every feature of this department will be resumed with our next issue, and we take this opportunity of thanking our readers for their indulgence.

APPLIES TO DENTISTRY.—Prejudice roosts on a perch from which facts are barred.

Before you step—*look ahead.* Before you fire—*aim.* Before you act—*plan.*

"Every duty which is bidden to wait returns with seven fresh duties at its back."—*C. Kingsley.*

EASY.—Customer—Give me ten cents' worth of paregoric, please.

Druggist—Yes, sir.

Customer (absentmindedly)—How much is it?

Druggist—A quarter.—*Exch.*

No friendly wind is going to pilot your dental practice into the port of profit. You must map out the course of your entire business voyage before you lift the anchor of initiative or set the sail of action.

It is the ship with its bunkers full, its engines tested, its captain forewarned, its straight line voyage charted, that breaks the record into port.

TO PREVENT BUBBLING OF BORAX.—Mix a minimum of gum-arabic and water with the borax on a glass slab.—*International Dental Journal.*

CLEAN BURS.—Burs are easily cleaned without dulling cutting edges by being held against a revolving wheel of soft wood, such as is used for carrying pumice in polishing plates.—*Dental Hints.*

TRUE BLISS.—A Washington youth wrote home, after the elopement: "I am married now, and all my troubles are over." Married men, please don't titter.—*Chicago Journal.*

SPOTS IN PINK RUBBER FACING.—When the red or black rubber is forced through the pink and shows in front the spots may be drilled out with an inverted cone bur and the cavities filled with pink gutta-percha. It will har-

monize with the pink rubber and not be conspicuous in the mouth.—F. A. GRAHAM, Harbor Springs, Mich., *Dental Review.*

GOING UP.—Doctor—"Your temperature is up to 103°."

Auctioneer (drowsily).—"Hundred an' three! Hundred an' three! Going, going at hundred an' three! Who'll make it hundred an' four?"

STUTTERING CURED BY CORRECTING MALOCCLUSION.—Dr. L. P. Bethel of Columbus claims to have cured a child from stuttering by correcting a class II protrusion case. The intermaxillary rubber bands were used.

SEPARATING MEDIUM.—A good separating medium is made by dissolving paraffin in gasoline. Put in all that the gasoline will take up. To use, spread solution over impression lightly with camel's-hair brush.—*Hints.*

ENTHUSIASM AND REASON.—Enthusiasm is commendable—without it we would degenerate; but when it cuts loose from reason and experience it is to be deprecated, for it is too apt to go astray.—J. E. NYMAN, in *Cosmos.*

PORCELAIN CROWN.—Diatoric teeth make good bicuspid crowns, especially for lowers. Bake a pin into the tooth, and it can then be adjusted with or without a band and finished in the usual way.—OLIVER MARTIN, Ottawa, Canada.

RESIN-SOAP THE BELT.—Dr. W. W. Belcher says the grip of the engine cord or belt is greatly improved by holding against it while running at high speed a bar of soap containing resin. To makes sure of the resin, buy cheap laundry soap.

CARBOLIC ACID ANTIDOTE.—Alcohol has a remarkable antidotal power in neutralizing the caustic effect of carbolic acid. Apply immediately to the affected part and cover with cottonoid kept saturated with alcohol. This will prevent blistering or disfigurement.—*Dental Era.*

LUBRICANTS.—An important fact to be borne in mind is that oil in a closely fitting long-bearing is a lubricant only when present in small quantity; in large quantity it acts as an adhesive. Little oil lets the machine go; much oil holds it fast.—*Dental Office and Laboratory.*

REVENGE IS SWEET.—Doctor's Wife—Aren't you going to take your instrument case?

Doctor—No; the patient is a plumber. I'm going to send back for the instruments and charge him for the time.—*Medical Drug Advertiser*

AFTER-PAINS OF EXTRACTION.—Relief may be given in a short time by inserting in the socket a pellet of absorbent cotton dipped in chloroform; place in each root socket, leaving it there a minute or two. In extreme cases repeat. Relief is sure to follow.—H. A. CROSS, *Dental Review.*

CARE OF THE MOUTH.—Two drops of camphor on your toothbrush will give your mouth the freshest, cleanest feeling imaginable, will make your gums rosy and absolutely prevent anything like cold sores or affections of your tongue. The gums, by the way, are barometers of our condition. If they are clear, bright red we are in good health, while if our blood is thin and wanting in the mysterious red corpuscles that make us healthy the gums

will be pale pink, or if we are in a very bad way indeed and much in need of a course of dialized iron, they will be almost white.—*How to Live.*

DEFINITION OF A DENTIST.—

"A dentist, love, makes teeth of bone,
For those whom fate has left without;
And finds provision for his own,
By pulling other people's out."

STRENGTHENED DENTAL RUBBER.—A toughened rubber, free from all brittleness and of very great strength is produced by a process of rolling a sheet of metal gauze between two sheets of rubber, the metal being of a quality not acted upon by the constituents of the rubber. Used in one piece, roughly cut to the shape of the plate.—*Dental Record.*

TO PREVENT ADHESION OF CEMENT UNDER BRIDGES.—To avoid the danger of getting cement under the saddle of a bridge, cover all portions where it is not desired to have the cement stick, with gum acacia dissolved in water. If cement goes where it is not wanted the gum will dissolve from underneath and the cement will not stick.—GEO. W. WHITFIELD, in *Dental Review.*

CLEANING THE TEETH.—In many cases taffeta ribbon will be found very useful. It is a very thin ribbon without any extra thickness at the salvage, called lutestring or taffeta ribbon. It is not very strong and in many places tears, but when it does go in, and with tooth powder, it does its work quickly and well.—HARRY F. HAMILTON, *International Dental Journal.*

SYMPATHY.—The dentist whose heart has not been torn with sympathy for his fear-stricken, suffering patient, on whom he or some other dentist has been operating, or sympathy for the trembling form of a suffering victim struggling between two of the strongest forces controlling our very life, viz., fear and duty—is not really human.—W. A. PRICE, in *Dentist's Magazine.*

POLISHING AMALGAM FILLINGS.—The surface of an amalgam filling should be made smooth with fine pumice and moosehide disks, followed by whiting and a fine brush wheel; this will produce a surface like burnished silver. These fillings, of course, tarnish; but at each sitting for cleansing, the luster is quickly restored with the polishing brush.—R. OTTOLENGUI, *Items of Interest.*

CONTROL OF ACIDITY IN THE MOUTH.—I have had made some very hard lozenges (tabloids) of bicarbonate of soda. I advise my patients to put one-quarter of a lozenge between the upper molars and the cheek on going to bed, changing from one side to the other alternately. The soda dissolves slowly all night and neutralizes the acid saliva.—E. J. WETZEL, *International Dental Journal.*

INLAYS: THE GOLD MATRIX.—It has been suggested that the matrix be formed of No. 36 gold plate, and that the portion which comes in contact with the margins and for a considerable distance below be left upon the inlay. After the cement is thoroughly hardened the surplus gold that overhangs the margins is to be cut off and the remaining gold burnished to

cover up the line of cement. The advantages are that the backing is so heavy that it will not pull in fusing the porcelain, and it makes a more perfect union between the inlay and tooth. I have found this method of great value.—F. T. Van Woert, *Dental Cosmos.*

Administration of Gas.—Gas does not act well where liquor and stimulants have been taken. Some people have the mistaken idea that they must "brace up" to have a tooth out. When they come to me with too much of that I tell them to go away and sober up before they can have gas at my hands. Tobacco and liquor contra-indicate the use of gas.—Dr. Straight, *Dental Register.*

Infected Wounds.—Fine results are obtained in the treatment of infected wounds with a mixture of pure carbolic acid so that the mixture feels like mere oil or chloroform when poured on the hand. The formula is carbolic acid 30 parts, camphor 60 parts, and alcohol to make 100. The mixture keeps perfectly if evaporation of the camphor is prevented.—V. Chlumsky, *Journal American Medical Association.*

Crowning a Tooth.—When a case presents, three paramount considerations present themslves: First, usefulness; secondly, æsthetic appearance; thirdly, durability without irritation to the surrounding tissues. Under the term "usefulness" we must consider the power to masticate or crush the food; the occluding surfaces more or less rough to better hold and cut the food; the other exposed surfaces cannot be too highly polished.—Edw. Eggleston, in *Dental Era.*

Punching Holes in Backings.—To punch holes in backings with accuracy I have found nothing more convenient than a small pair of compasses with screw adjustment. Set the points by the pins in the facing and try by punching holes in a piece of copper plate the same gauge as the backing; adjust if necessary, then punch the backing and place the side with the bur made by the points away from the facing.—S. Preston, Bramwell, W. Va., *Dental Cosmos.*

The Avoidance of Pain.—The avoidance of pain in the least degree, when possible, goes a long way with patients. Every movement about the mouth should be as delicate and gentle as possible. Being made comfortable in every way instead of being hurt and irritated will be appreciated, and with care and thoughtfulness much can be done to avoid discomfort. A dentist who is not delicate and gentle is working against his own interests.—R. B. Tuller, *American Dental Journal.*

Iodin as a Germicide.—In a solution of iodin varying from 0.2 to 1 per cent., we have a very potent germicidal agent, far superior to mercury bichlorid, the acknowledged leader of all other antiseptics. It approaches nearly to the ideal antiseptic, in that: (a) It is easily prepared and is stable; (b) it is non-toxic and non-irritating in strength effective, being only one-fourth as toxic as bichlorid mercury; (c) it does not coagulate albumin nor form inert compounds with tissues; (d) it is effective in a very brief time; (e) the strain it produces soon disappears; (f) last, and

most important, it possesses a remarkable penetrating power. In conclusion, he remarks, that an 0.5 per cent. solution is amply strong enough for all practical purposes.—*St. Louis Medical Review.*

For Sore and Spongy Gums.—A useful mouth-wash is made with tincture of myrrh, a dram to a tumblerful of water; or tincture of iodin (two to four drams in eight ounces of water), with tannin. Bartholow employed a mouth-wash of one dram of tannic acid, two ounces honey of rose and four ounces of water. Davis recommends a weak solution of thymol or boric acid or carbolic acid; also a weak galvanic current for seven to ten minutes through the parotid and salivary glands.—*Denver Med. Times.*

Hypersensitive Dentin.—Dentinal supersensitiveness of the acutest type is successfully obtunded with minute applications of a solution of erythrophlein chlorid in eugenol. A very small pellet of cotton is saturated with a 50 per cent solution and sealed in the cavity with gutta-percha and left undisturbed for from twenty-four to forty-eight hours. It is absolutely necessary to remove the dressing inside of two days, or it may provoke slight inflammatory symptoms in the pulp and pericementum.—M. Andy, *L'Odontologie.*

A Good Coating for Plaster Casts.—To four ounces of sulphuric ether add two ounces of collodion and two ounces of "silver gloss." The latter may be obtained from dealers in painters' supplies and is put up in one-ounce packages. Let the mixture stand for about forty-eight hours and shake well before using. Apply with a camelhair brush and keep in well-corked bottle. This will give a beautiful glossy surface to casts.

She Hadn't Enough.—A woman entered a photographer's gallery. "Do you take pictures of children?" she asked.

"Yes," was the reply.

"How much are they, please?"

"Three dollars a dozen," said the proprietor.

"Well," she replied with a sigh, "I shall have to wait and come again. I have only eleven.—*Exch.*

Formagen Cement.—To avoid pulp devitalization in cases where caries encroaches very near the pulp, or in case of accidental pulp exposure, insert a small amount of formagen cement, then a sufficient quantity of "osteo" to allow of cutting retention grooves or undercuts, and finish with amalgam, gold or porcelain. While a few pulps are prone to necrosis, the majority will survive under this treatment.—Arthur L. Bostick, *Dental Record.*

Civility is a charm that attracts the love of all men, and too much is better than to show too little.

Value of Strawberries.—That delicious fruit, the strawberry, must be classed with the most wholesome production of the vegetable kingdom. It is recorded of Fontenelle that he attributed his longevity to them in consequence of their having regularly cooled a fever which he had every spring, and that he used to say: "If I can but reach the season of strawberries!"

Boerhaave looked upon their continual use as one of the principal remedies in cases of obstruction and viscidity, and in putrid disorders. Hoffman furnished instances of obstinate disorders cured by them, even consumption, and Linnaeus said that by eating plentifully of them he kept himself free from gout. They are good even for the teeth.—*How to Live.*

THE GOSPEL OF CLEANLINESS.—You have just one gospel to preach and you have got to preach it early and you have got to preach it late, in season and out of season. It is the gospel of cleanliness of the mouth, cleanliness of the teeth, cleanliness of the throat. These three things must be our text throughout life—oral hygiene, the hygiene of the mouth. There is not any one single thing more important to the public in the whole range of hygiene than that, and it is with that you as practitioners will have to deal.—PROF. OSLER, *British Dental Journal.*

A CURIOUS CASE OF MERCURIAL INTOXICATION CAUSED BY AN AMALGAM FILLING. By Dr. Martinet.—The essayist reports an extraordinary case of mercurial poisoning which resulted from the filling of a small carious cavity with amalgam. The symptoms were those of severe stomatitis, and upon the hypogastric and crural regions a scarlatiniform erythema developed. Two days prior to the appearance of all these symptoms the patient had had a tooth filled with a quantity of amalgam containing certainly not over gr. ⅛ of metallic mercury. *Valeat quantum valere potest.*

PREPARATION TO STOP PAIN IN A TOOTH.—The following preparation has been found effective in relieving pain in a tooth where other remedies, usually employed, have produced no results:

Carbolic acid	dr. 1
Oil sassafras	dr. 2
Eugenol	dr. 2
4 per cent solution cocain	dr. 1

In having the preparation made up be sure that eugenol is used and not oil of cloves.—E. G. MCALREY, Chicago, *Dental Review.*

A DREAM IN A DENTIST'S CHAIR.—The following rather poetic dream was told me by a friend as consequent on the somewhat prosaic operation of having a tooth removed under gas. He dreamed immediately that he was soaring through space with an intense feeling of freedom and ecstasy. Up and up through the ethereal regions he went, till suddenly he popped out on the floor of heaven! And there (I suppose he had been reading Plato) he beheld the twelve gods seated in a semi-circle, and filled (as the gods should be) with inextinguishable joy and laughter. And well might they laugh; for now he became conscious of himself, there on the floor of heaven, as a small transparent ball of jelly, in the center of which was a speck, which he knew to be his very self or ego. He also was greatly amused, and was just about to join in the laughter, when he heard behind him a horrible sound, as of the belling of a gigantic bloodhound; and a sense of awful despair seized him as he realized that his body, with his mouth wide open, was in pursuit of him. Escape was hopeless; there was

a moment of agony as he was swallowed down; and then he awoke to find his tooth out! In a dream like this, though one cannot suppose it to be an accurate description or vision of what actually took place, yet one may well suppose it to be an artistic representation of real facts and feelings, and an endeavor to portray them in the symbols and images of the world we know.—From "The Art of Creation," by Edward Carpenter (George Allen).

Healing in Septic Cases: Iodoform Wax in Bone Cases.—Mann is convinced that in thorough removal of septic tissues, and in the use of strong carbolic acid, followed by alcohol, we have powerful agents, which allow us to prepare many septic conditions for rapid healing, and in subacute and chronic processes very often for healing by first intention. He also believes that in the iodoform wax we have an admirable substitute for iodoform packing, bone chips, and healing by blood clot, one which makes convalescence smoother and shorter, and which in some cases enables us to gain results which are impossible by the usual methods.—*Exch.*

Advantages of the Clasp.—There is an unjust prejudice in the minds of some patients, and also dentists, against the use of clasps. This is probably due to an improper knowledge of their advantages and disadvantages; also an insufficient knowledge of the mechanical principles involved and their practical application. The advantages of the clasp may be summed up in the statement that there is no method by which a partial plate denture can be retained with so much comfort and usefulness to the patient as with clasps. This implies that the conditions are favorable and that the method is properly applied.—George H. Wilson, *Dental Summary.*

Treatment of Felons.—Felons are classed as minor surgery, and yet many a finger has been lost through their careless treatment. Antiphlogistine is a specific in incipient cases. Apply hot, change every six or eight hours, and resolution will, as a rule, occur without the formation of pus.

If pus has already formed, incise deeply and freely. Thoroughness is essential. Evacuate and cleanse with a suitable antiseptic. Insert a drainage tube. Surround the finger with antiphlogistine. Cut the drainage tube ¼ inch above the surface of the antiphlogistine. Cover all with absorbent cotton and a bandage. The results will be satisfactory.—*Brooklyn Med. Jnl.*

Impression for Porcelain Inlay.—After a cavity is prepared make a mix of cement which can be conveniently handled with the fingers. Moisten the fingers slightly and thoroughly knead the cement mass between the thumb and fingers. This will expel any air bubbles and thus insure a sharp, clean impression, which would be impossible where the cement has been luted by some foreign substance Wash the cavity with warm water before introducing the cement, but do not dry it out, as a little moisture is necessary to facilitate the removal of the impression. If the cavity is in the proximal surface a metal matrix should be placed between the teeth and the cement forced into the cavity from the direction in which it is to be removed. The matrix should then be turned back over the cement and

held firmly in place until the cement has set sufficiently to permit of its removal. This impression is for use in making a matrix for porcelain inlays.—C. H. FARRAND, La Crosse, Wis.

EXTRAORDINARY POWERS OF MUSCULAR CONTROL.—Viennese medical circles have lately been thrown into astonishment over a man whose powers of muscular control are developed to a phenomenal extent. This individual possesses to a surprising degree the ability to make use of muscles of whose very existence the ordinary person is entirely ignorant. For example, he is able to throw his abdominal muscles into wavelike contractions; by means of usually passive muscles he produces a vibration of the skin of the neck, and he also moves the larynx by means of its intrinsic muscles. He can dilate or contract the pupils at will, and once when on exhibition before Prof. Hoffa, on being challenged to simulate a scoliosis, he succeeded in producing a lateral curvature of the spine without any movement of the pelvis. A still more remarkable feat is his ability to stop his radial pulse by drawing the first rib up to the clavicle by means of the subclavius muscle, thus compressing the subclavian vessels. This remarkable individual can displace various organs—for example, his heart, causing the appex beat suddenly to appear in the most unexpected positions. His most remarkable performance is a dislocation of the small intestine. The diaphragm is forced upwards to such an extent that the lungs are compressed into about half of their usual volume, and then the small intestine is moved up into the space thus formed, so that the vermiculation of the gut may be perceived through the thoracic parieties. The displacement of the intestine can also be verified by X-ray examination. The man discovered his singular powers by accident in the course of a physical examination by a physician, and since then through studies of his own and, aided by hints from his medical friends, he has devolped these strange faculties to an incredible degree.—*New York Medical Record* (Vienna letter).

CAMPHO-PHENIQUE AS A LOCAL ANÆSTHETIC.—All operations in the mouth should be preceded by application of a local anesthetic. In many mouths nausea, even vomiting, is caused by the insertion of fingers, instruments or impression trays.

To avoid this especially is campho-phenique indicated to obtund local sensation and prevent pain incident to the removal of calculus, polishing teeth, wedging, applying and ligating the rubber dam, removing loose roots, and to prevent nausea, gagging, etc., prior to taking impressions.

Nothing to the writer's knowledge acts so nicely as ten grains of finely powdered cocain added to one fluid ounce of campho-phenique (original package). This makes approximately a two per cent solution, which, when applied on a large-size pledget of cotton to the entire mucous surface of the mouth, completely obtunds local sensation and overcomes nausea.

In cases of odontalgia from an exposed pulp a warmed application of this

solution on a pellet of cotton usually relieves the pain, and for treating sensitive cavities preparatory to filling it is of equal value when the remedy is sealed in the cavity with temporary stopping, or gutta-percha.—B. LEE THORPE, St. Louis, *Dental Brief.*

A HINT ON IMPRESSION TAKING.—To prevent the plaster from flowing down the patient's throat when taking an impression, prepare the tray as follows: Puncture the impression tray near the heel, making several holes about a quarter of an inch in diameter. Build up the heel with wax to reach the palate, and from this carry a piece of sheet wax forward under the tray. When taking the impression the surplus plaster will be forced through the holes and carried forward by the sheet of wax under the tray, thus effectually protecting the throat. The same result may be attained by cutting a V-shaped piece from the rear of the tray and building with wax, as described above.—F. W. STEPHAN, *Dental Review.*

REMOVAL OF FOREIGN BODY FROM THE ESOPHAGUS.—A patient recently came to my office complaining of having swallowed a fish bone between three and four hours previously. It had lodged in the esophagus just below the larnyx and caused considerable mental and physical distress. A probang not being at hand, I was at a loss what to do until I recalled a statement once made by Dr. Gile, professor of the practice of medicine in the Dartmouth Medical College, when lecturing on diseases of the intestinal tract. He said that a snarl of thread swallowed and then withdrawn was very effectual in removing foreign bodies from the esophagus. I acted upon this suggestion, using ordinary grocer's twine for the snarl, and a fish bone an inch in length was successfully removed.—R. J. WARD M. D., *American Medicine.*

A NEW METHOD OF MAKING RETAINING POINTS IN PORCELAIN INLAYS.—After having cut a piece of platinum foil of a convenient size it should be lightly pressed into the cavity. A ring is afterward prepared with half-round wire, either pure gold or platinum-gold alloy. The alloy must be selected according to directions given later and the thickness of the wire should be, as one will see farther on, proportionate to the depth of the cavity and to the groove we desire to obtain. The shape of this ring will be a little smaller. It is placed on the platinum foil, the round side touching the platinum, and then a very little piece of pure gold foil for filling (not thicker than say No. 5 or 6) is inserted between the ring and the platinum foil. Place the whole over the Bunsen burner flame, or in an electric furnace, and withdraw it when the gold foil is melted, and consequently the half-round wire soldered to the platinum. The platinum foil provided with the ring is now pressed well into the cavity of the tooth and the inlay finished as usual. After baking, remove the platinum foil as usual, and with a chisel or a wheel expose the ring. Then boil the inlay in a few drops of aqua regia in an evaporating dish. The ebullition should last five or ten minutes, according to the size of the ring and the alloy used, and ought to be done under a well-ventilated chimney. After this boiling the metal will be dissolved and there will be in the inlay an undercut groove

the shape of the wire. The author feels that this method, which, of course, is unnecessary where it is easy to obtain an excellent anchorage by grinding with a wheel, is of great use in small, thin inlays which have not to support a very great masticating strain. The half-round shape of the wire is not essential; a wire triangular or otherwise will produce depressions of an excellent retaining form.—B. PLATSHICK, Paris, (*British Dental Journal*).

SOLDERING WITHOUT A BLOWPIPE.—Much of the soldering with 18 and 20-carat gold may be done without a blowpipe and with less risk of fracturing porcelains or melting off gold backings. Trim and shape a lump of charcoal so that it will fit into the burner without tilting, and with a depression in the top for the reception of the piece. Build charcoal cabinwise around the work and roof over with flat pieces to radiate the heat back on the work, with an opening at the front to give a view of the piece and opportunity to add solder if needed. Clip the solder into small bits, dip in cream of borax, handling with pliers, and apply sufficient to solder the case. Light the gas and let it heat up, having the burner so located as to avoid side draughts. A surprisingly high degree of heat is thus obtained.—L. G. NOEL, *Pacific Dental Gazette.*

REPAIRING FRACTURED CASTS.—A valuable method of repairing plaster casts may be found in the use of celluloid dissolved in camphor and ether to a creamy consistency. A good quality of celluloid should be selected and to it should be added a mixture of equal parts of ether and spirits of camphor. This combination dissolves celluloid rapidly and should be added to the material until a solution of a creamy consistency is obtained. The preparation should be kept tightly corked to avoid its evaporation.

When it becomes desirable to repair broken casts the fragments to be attached should be well dried and both surfaces should be freed from broken particles. The surfaces should be coated with the celluloid solution, and after being pressed firmly should be allowed to dry.—S. M. WEEKS, *International Dental Journal.*

SODIUM-DIOXID BLEACHING.—The dam is placed over the tooth and adjacent teeth. A thin platinum band is wrapped around the tooth to be bleached and white gutta-percha warmed and used to form a pocket about the cavity.

By the use of a small gold or platinum spoon, some sodium dioxide is placed in the cavity and forced some distance up the root canal with a glass instrument. Distilled water is now dropped into the cavity and the band of platinum held over the cavity to force the generated oxygen into the dentin. After sufficient time to allow the oxygen to work the cavity should be washed and dried, and the operation repeated if necessary.

Should it be found impossible to remove the pigment mechanically with water, a three per cent solution of sulphuric acid may be used to chemically dissolve it, after which wash with water and allow to dry perfectly without using hot air. Now burnish a paste of precipitate of calcium phosphate and distilled water into the lower third of the root and against

all exposed dentin. Make a base for final filling, using light colored cement.—R. B. TULLER, *in American Journal.*

TROUBLESOME THIRD MOLARS.—The most frequent cause of the serious complications attending the eruption of the third molars is lack of vertical space for the proper development of the organ; nor is this restriction always directly due to the disproportion between the size of the teeth and the dimensions of the maxillary. On the contrary, the irritation is usually produced by the contact of the previously erupted third molar with the distended membrane covering the erupting tooth in the opposite jaw. In most cases where trouble exists a careful investigation will disclose a distinctly visible imprint upon the inflamed gum, whch receives its compact at all times when the mouth is unopened. A careful grinding of these cusps generally suffices to reduce the inflammation, relieves the pain and restores the parts to a healthy condition.—W. KELSEY, Marseilles, France, *Dental Review.*

STERILIZATION OF CUTTING INSTRUMENTS.—Of fifty prominent surgeons who were asked their practice in the sterilization of knives and scissors by H. A. Royster (Annals of Gynecology and Pediatrics, February, 1905), twenty boiled them; two use dry heat and twenty-one use chemical agents, chiefly carbolic acid, alcohol or both. Many complaints are made of the ruining of cutting instruments by the process of sterilization. The author has made experiments to determine the effects of the various methods and arrives at the following conclusions: (1) Knives can be safely sterilized by chemical and mechanical means without the use of heat in any form. (2) The majority of American surgeons are using carbolic acid or alcohol, or both. (3) Immersion in 95 per cent alcohol has the least and boiling the most effect in dulling the edge of a knife.—*Detroit Medical Journal.*

At St. Winifred's Hospital, San Francisco, Dr. Winslow Anderson uses 5 per cent formalin in absolute alcohol for all cutting instruments.—*Pacific Medical Journal.*

EVILS OF EATING QUICKLY.—It is a mistake to eat quickly. Mastication performed in haste must be imperfect even with the best of teeth, and due admixture of the salivary secretion with the food cannot take place. When a crude mass of inadequately crushed muscular fiber, or undivided solid material of any description, is thrown into the stomach, it acts as a mechanical irritant, and sets up a condition in the mucous membrane lining that organ, which greatly impedes, if it does not altogether prevent, the process of digestion. When the practice of eating quickly and filling the stomach with unprepared food is habitual, the digestive organ is rendered incapable of performing its proper functions. Either a much larger quantity of food than would be necessary under natural conditions is required, or the system suffers from lack of nourishment. The matter may seem a small one, but it is not so. Just as a man may go on for years with defective teeth, imperfectly masticating his food, and wondering why he suffers from indigestion, so a man may habitually live under an infliction of hurried dinners, and endure the consequent loss of health, without know-

ing why he is not well, or how easily the cause of his illness might be remedied.—*How to Live.*

STANNO-PERCHA: A COMBINATION OF TIN AND GUTTA-PERCHA FOR FILLING PURPOSES. By Dr. Arthur Scheuer. The author speaks of the advantages and disadvantages of gutta-percha as a filling material. All the preparations heretofore in the market possess the disadvantages of undergoing considerable change in form shortly after insertion in the cavity. The mass bulges out and, exposing the cavity margins, renders possible the recurrence of the carious process. Furthermore, the insertion of a gutta-percha filling is by no means an easy operation, either because it is as a rule necessary to hold the first pieces *in situ* by means of one instrument while with another the mass is adapted to the walls of the cavity, or else because particles of the filling material adhere tenaciously to the instrument. To obviate the above enumerated disadvantages Dr. Scheuer recommends the tin-gutta-percha combination suggested by A. T. Cruschtschoff as published in the *Subovratschevny Vestnik* of St. Petersburg.

The form of tin which is incorporated into the gutta-percha is the so-called sponge tin suggested by Dr. Scheuer about two years ago. It is prepared by dissolving one hundred grams of chemically pure stannic chlorid in one liter of water. The precipitation of the tin is brought about by suspending in the solution a plate of chemically pure zinc. The precipitate must be washed repeatedly and also boiled until the water shows no cloudiness whatever, the purpose of this thorough washing being to remove all particles of zinc chlorid. The washing should be continued until the litmus-paper test shows that all traces of acid have been removed. Stanno-percha is prepared by mixing in a mortar in a sand bath equal parts of pink gutta-percha and sponge-tin. The two ingredients should be thoroughly rubbed until the whole mass assumes a grayish color. One-half of the mass is then removed from the mortar and to the remaining half is again added an equal amount of gutta-percha. The mass at first removed from the mortar is soft and is used to line the cavity, while the material which remained in the mortar and which was mixed with an additional amount of tin is used to complete the filling. A filling material thus prepared possesses several advantageous features, inasmuch as it makes a dense filling, is not affected by friction, does not expand under the influence of its humid surroundings, becomes soft at a relatively low temperature, and remains so longer than the unmixed material, thus obviating the necessity of heating the instruments repeatedly. It possesses also over the older preparations the valuable feature of not adhering to the instrument when heated previous to being inserted in the cavity. Stanno-percha can be used in combination with gold or amalgam alloys. The deeper portions of the cavity are filled with stanno-percha, which acts as a protective lining to the pulp, and the filling is completed with either gold or amalgam, which materials adapt themselves perfectly to stanno-percha, especially gold when hot through annealing.—*Deutsche Zahnarztliche Wochenschrift,* Berlin. (*Dental Cosmos.*)